

KV-13EXR90

SERVICE MANUAL

US Model

Chassis No. 5CC-D37A-A

Canadian Model

Chassis No. SCC-D36H-A

P3B CHASSIS

Note: The service manual for RM - 780 / RM - 781
has been issued separately.

MODELS OF THE SAME SERIES	
KV-19TR10	KV-19TS20
KV-19TR20	
KV-19TS10	

SPECIFICATIONS

Television system	American TV standards
Channel coverage	VHP: 2-13 UHF: 14-69 Cable TV: 1-125
Picture tube	Mirror black Trinitron tube 13-inch picture measured diagonally 14-inch picture tube measured diagonally
Antenna	75-ohm external antenna terminal for VHF/UHF
Input	VIDEO INPUT (phono jacks)
(Only for KV-19TR20)	Video: IVp-p, 75-ohms unbalanced, sync negative Audio : SOOmVrms (100% modulation) impedance: 10k ohms
Power requirement	120V AC, 60Hz
Power consumption	120W (Max.) 5W (in standby condition)
Accessories supplied	Remote Commander RM-781 Remote Commander RM-780 with 2 size AA (R6) batteries VHF/UHF telescopic dipole antenna (1) (Only for USA models) Antenna connector(1)
Optional accessories	U/V mixer 6AC-66 Connecting cable VMC-606/607M VMC-810/820S RK-74A

Speaker Impedance	SN
Speaker Wattage/channel	Approx. 2W
Dimension*	Approx. 500X455X463mm(w/h/d)
Weight	Approx. 16.3kg

Designs and specifications are subject to change
without notice.

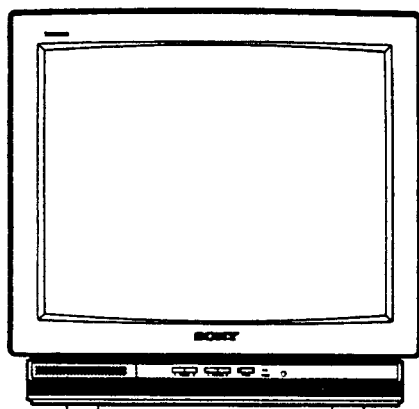


TRINITRON-COLOR TV
SONY

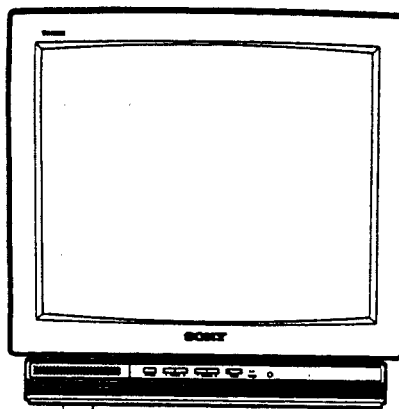
KV-19TR10/19TR20

RM-780/RM-781

SERVICE MANUAL



KV-19TR10



KV-19TR20

6395 *US Model*
KV-19TR10

Chassis No. SCC-D37E-A

KV-19TR20

Chassis No. SCC-D37F-A

Canadian Model
KV-19TR10

Chassis No. SCC-D36C-A

KV-19TR20

Chassis No. SCC-D36B-A

P-3B CHASSIS

Note: The service manual for RM-780 / RM-781 has been issued separately.

MODELS OF THE SAME SERIES

KV-19TR10	KV-19TS20
KV-19TR20	
KV-19TS10	

SPECIFICATIONS

Television system	American TV standards
Channel coverage	VHF : 2-13 UHF : 14-69 Cable TV : 1-125
Picture tube	Mirror black Trinitron tube 19-inch picture measured diagonally 20-inch picture tube measured diagonally
Antenna	75-ohm external antenna terminal for VHF/UHF
Input	VIDEO INPUT (phono jacks)
(Only for KV-19TR20)	Video : 1Vp-p, 75-ohms unbalanced, sync negative Audio : 500mVrms (100% modulation) impedance : 10k ohms
Power requirements	120V AC, 60Hz
Power consumption	120W (Max.) 5W (in standby condition)
Accessories supplied	Remote Commander RM-781 (1) (KV-19TR20) Remote Commander RM-780 (1) (KV-19TR10) with 2 size AA (R6) batteries VHF/UHF telescopic dipole antenna (1) (Only for USA models) Antenna connector (1)
Optional accessories	U/V mixer EAC-66 Connecting cable VMC-606/607M VMC-810/820S RK-74A

Speaker Impedance	8Ω
Speaker Wattage/channel	Approx. 2W
Dimensions	Approx. 500×455×463mm(w/h/d)
Weight	Approx. 19.3kg

Designs and specifications are subject to change without notice.



TRINITRON® COLOR TV

SONY®

6395

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WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

AFIN D'ÉVITER TOUT RISQUE D'ÉLECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ÊTRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

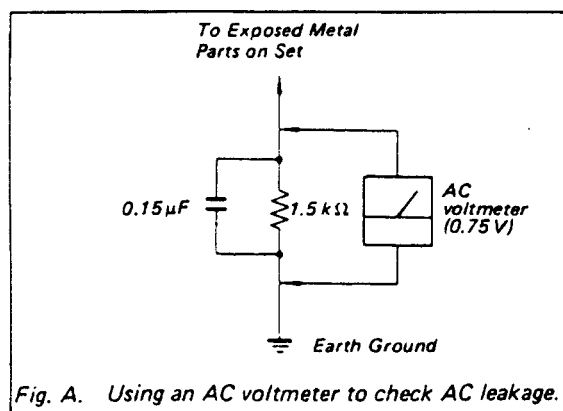
LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE  SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT

(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

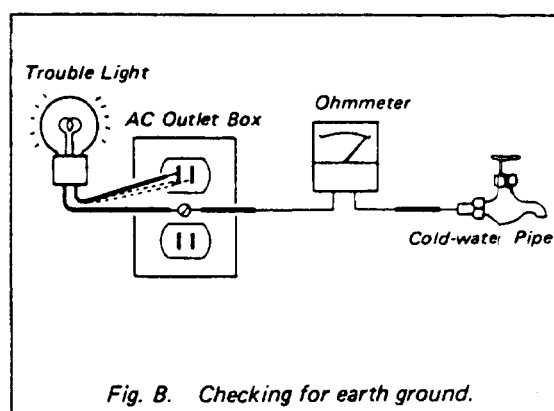
**LEAKAGE TEST**

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

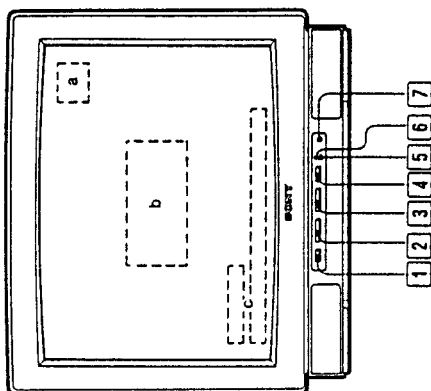
HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)



1-1. LOCATION OF CONTROLS

Front



- On-screen displays**
- a) • Channel numbers
 - MTS mode indication
 - "MUTING", "SLEEP" or "VIDEO" indication
 - b) "AUTO PROGRAM", "TIMER" or "TIMER BLOCK" indication
 - c) • Bar display for volume or picture adjustment
 - Current time for Timer/Block

1 TV/VIDEO button
(Only for KV-19TS20, KV-19TR20)

MTS button
(Only for KV-19TS10, KV-2037RS)

2 VOLUME +/- buttons

3 CHANNEL +/- buttons

4 POWER switch

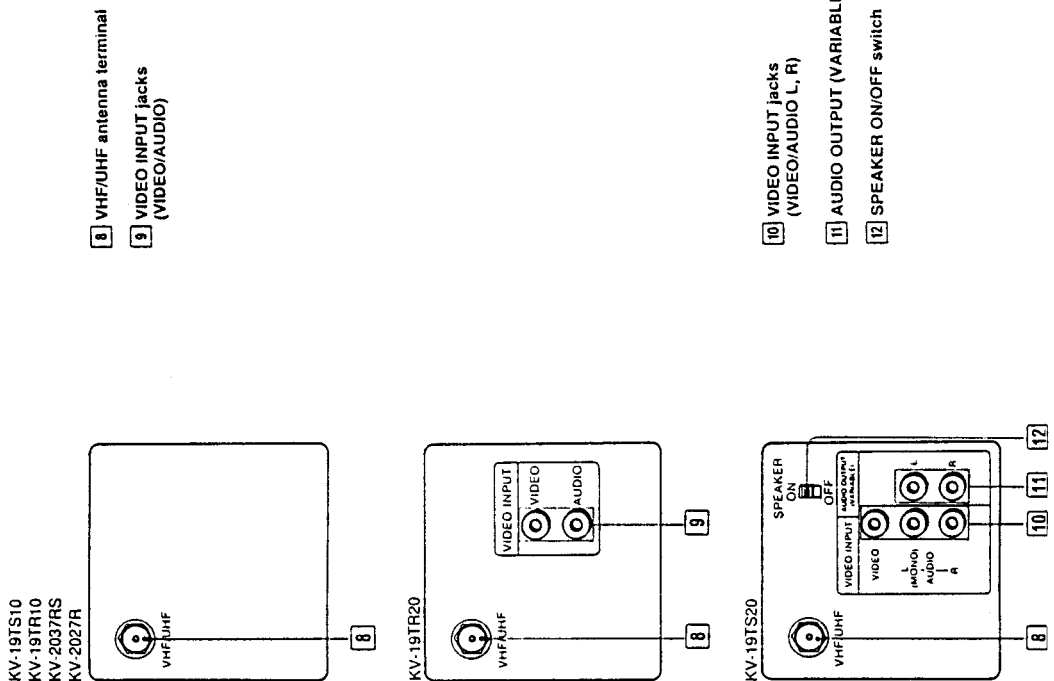
5 TIMER lamp

6 STEREO lamp
(Only for KV-19TS20, KV-19TS10, KV-2037RS)

7 Remote control detector

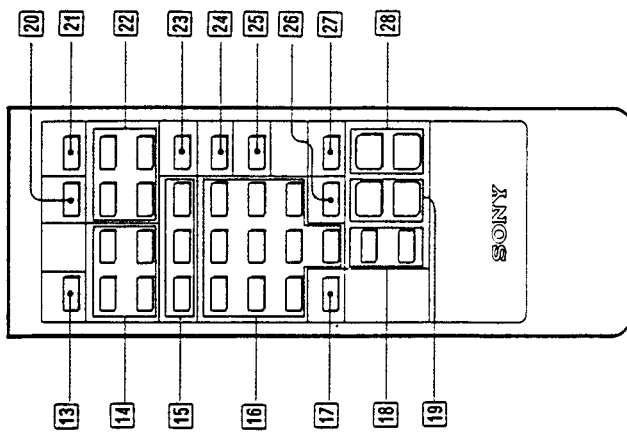
SECTION 1 GENERAL

Rear



1-2. LOCATION OF CONTENTS

Remote Commander RM-780/781/782/783

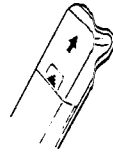


- 13] MUTING button
- 14] TIMER/BLOCK setting buttons (TIMER/BLOCK, CLEAR, AM/PM, OFF/REPEAT)
- 15] Channel presetting buttons (AUTO PGM, ADD, ERASE)
- 16] Channel number buttons
- 17] DISPLAY button
- 18] PICTURE +/- buttons
- 19] *VOL (volume) +/- buttons
- 20] SLEEP button
- 21] *POWER switch
- 22] Picture adjusting buttons (SELECT, RESET, LEVEL +/-)
- 23] CABLE button
- 24] *TV/VIDEO button (Only for RM-781, RM-783)
- 25] *MTS button (Only for RM-782, RM-783)
- 26] ENTER button
- 27] JUMP button
- 28] *CH (channel) +/- buttons

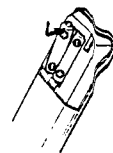
* The functions of these buttons are also available on the TV.

Battery installation

1 Open the lid.



2 Insert two size AA(R6) batteries with correct polarity.



- * In normal operation, batteries will last up to half a year. If the Commander does not operate properly, the batteries might be exhausted. Replace them with new ones.
- * To avoid damage from possible battery leakage, remove the batteries when the Commander will not be used for a long time.
- * If a Remote Commander that is not recommended is used to operate this TV, or if the supplied Remote Commander is used to operate another TV, the TV may not operate properly.

1-3. PRESETTING TV CHANNELS

To Preset All Receivable Channels Automatically

KV-19TS20

1 Remote control detector

RM-783

1 2 3

1 Press POWER on the TV or the Remote Commander to turn the TV on.

2 Press CABLE so that the appropriate mode appears.

3 Press AUTO PGM.

To preset VHF or UHF channels

To preset cable TV channels

"AUTO PROGRAM" is displayed on the screen and receivable channels (other than the channels already preset) will be preset in numerical sequence. The channels previously preset remain in the unit's memory.

When no more channels can be found, the programming stops and the lowest numbered channel is displayed.

Receivable channels of this TV are:

VHF: 2-13
UHF: 14-69
Cable: 1-125

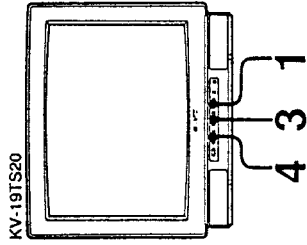
To check preset channels
Press CH +/-.

To add the channels that could not be preset with automatic programming because their signal strength was too weak, or to erase unnecessary channels, follow the steps in "To preset only the desired channels" on the next page.

Only for KV-19TS20, KV-19TR20
If the "VIDEO" indication is displayed on the screen Press the TV/VIDEO button on the TV or on the Remote Commander so that a channel number appears.

1-4. WATCHING TV PROGRAMS

To Preset Only the Desired Channel or to Erase Unnecessary Channels



1 Press the channel number button(s) and then ENTER to select the channel to be added or erased.

1 2 3
4 5 6
7 8 9
0 ENTER

2 To add channels - Press ADD.

ADD

+8

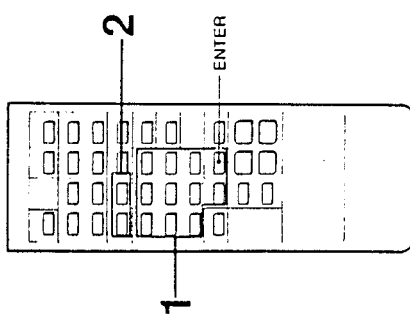
A " " appears for a moment.
This channel has now been added to the channel scan memory.

To erase channels - Press ERASE.

ERASE

-8

A " " appears for a moment.
This channel has now been erased from the channel scan memory.
The next time the CH +/- button is pressed, this channel will be skipped.



1 Press the channel number button(s) and then ENTER to select the channel to be added or erased.

2 To add channels - Press ADD.

ADD

+8

A " " appears for a moment.
This channel has now been added to the channel scan memory.

To erase channels - Press ERASE.

ERASE

-8

A " " appears for a moment.
This channel has now been erased from the channel scan memory.
The next time the CH +/- button is pressed, this channel will be skipped.

1 Press POWER on the TV or the Remote Commander to turn the TV on.

2 Press CABLE so that the appropriate mode appears.

CABLE

3

To view VHF or UHF channels

C3

To view cable TV channels

3 Select a channel in one of the following two ways:

To select a channel directly, press the channel number button(s) and then ENTER.
For example, to select channel 10, press 1, 0 and ENTER.

To scan the preset channels in numerical sequence, press CH +/-.

CH +/-

1 2 3
4 5 6
7 8 9
0 ENTER

4 Press VOL + or - to adjust the volume.

VOL +/-

Note
To turn off the TV
Press POWER on the TV or the Remote Commander again.

When a VHF or UHF channel is erased
The cable TV channel with the same number is also erased and vice versa.

Cable TV channel chart*
Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to the chart below.

Number on this TV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Corresponding CATV channel	A.6	A.7	A.8	A.9	A.10	A.11	A.12	A.13	A.14	A.15	A.16	A.17	A.18	A.19	A.20	A.21	A.22	A.23	A.24	A.25	A.26	A.27	A.28	A.29	A.30	A.31	A.32	A.33	A.34	A.35
R	S	T	U	V	W	X	Y	Z	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

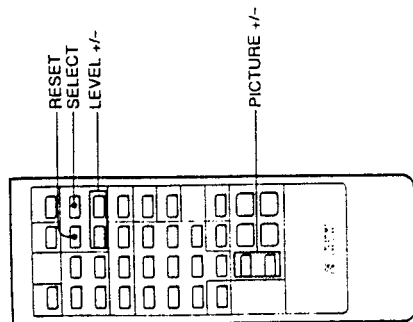
Check with your local cable TV company for more complete information on the available channels.

* The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

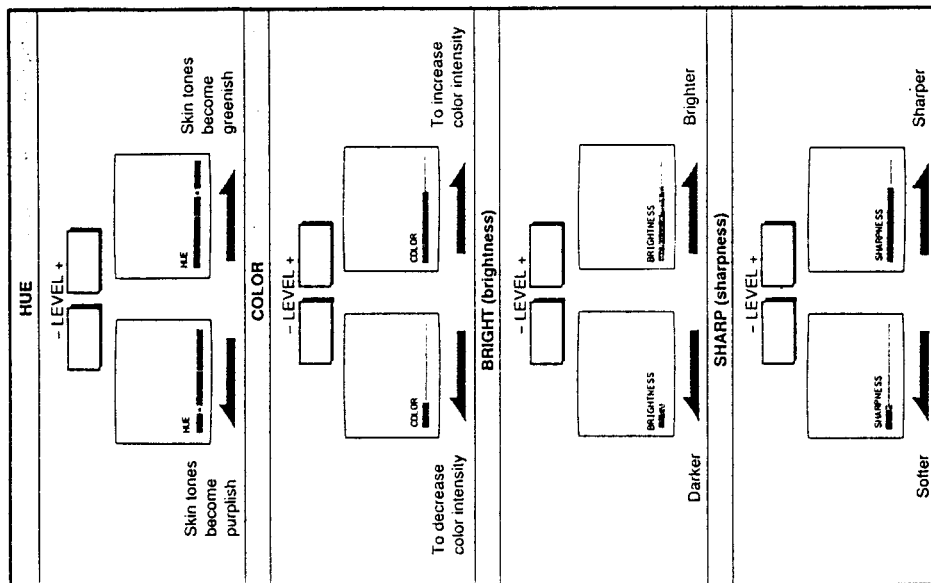
Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

1-5. ADJUSTING THE PICTURE

Press SELECT repeatedly until the on-screen display of the item to be adjusted appears, then press LEVEL +/-.



RM-783



To adjust picture contrast

Press to increase picture contrast with vivid color.



Press to decrease picture contrast with soft color.

To clear the adjustment levels and restore the factory preset levels at once, press RESET.

1-6. ENJOYING THE CONVENIENT FEATURES

Muting the sound

Press **MUTING**.
The "MUTING" indication will appear on the screen.
To restore the sound, press **MUTING** again or **VOL +**.

Using the SLEEP timer

Press **SLEEP**.
The TV will be turned off automatically after about one hour.
The green "SLEEP ON" indication will appear on the screen for a few seconds when **SLEEP** is pressed and the red "SLEEP" indication will appear one minute before the TV is turned off.
To cancel the **SLEEP** timer, press **SLEEP** again, or turn off the TV. The "SLEEP OFF" indication will appear when **SLEEP** is pressed again.

Receiving a Multichannel TV Sound program (Only for KV-19TS20, KV-19TS10, KV-2037RS)

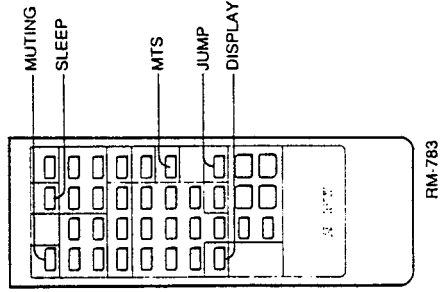
Each time **MTS** is pressed, **MAIN**, **SAP** (Second Audio Program), or **MONO** are selected in sequence.
To listen to stereo sound, select the **MAIN** mode so that the on-screen **MAIN** indication appears. The **STEREO** indicator on the TV lights up whenever a stereo broadcast is received.
There may be cases of stereo broadcasts where excessive noise will be heard due to a weak incoming signal. You may be able to eliminate this noise by selecting the **MONO** mode.

Switching quickly between two channels

Press **JUMP**.
Each time **JUMP** is pressed, the channel which appeared on the screen directly before is recalled. This button enables you to keep track of two programs alternately.

Keeping the channel displayed

Press **DISPLAY**.
To make the channel display disappear, press **DISPLAY** again.



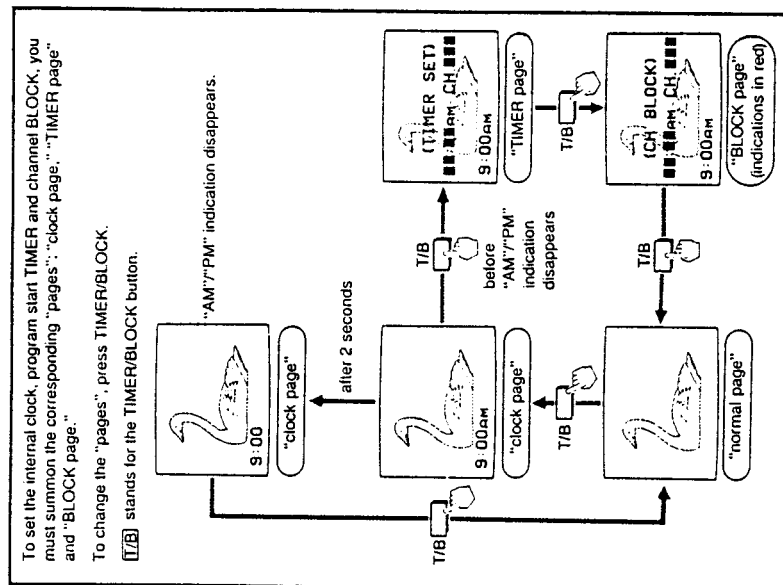
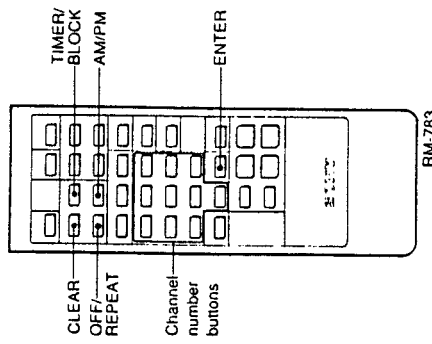
RM-783

1-7. TIMER/BLOCK

Available Functions

Internal clock	Once the internal clock is set, the current time will appear on the screen. It is necessary to set the clock correctly to activate the program start TIMER and channel BLOCK.
Program start TIMER	Makes a program of your choice appear on the screen automatically at the desired time.
Channel BLOCK	Blocks a channel from appearing on the screen for 12 hours. Use channel BLOCK to prevent children from watching undesirable programs.

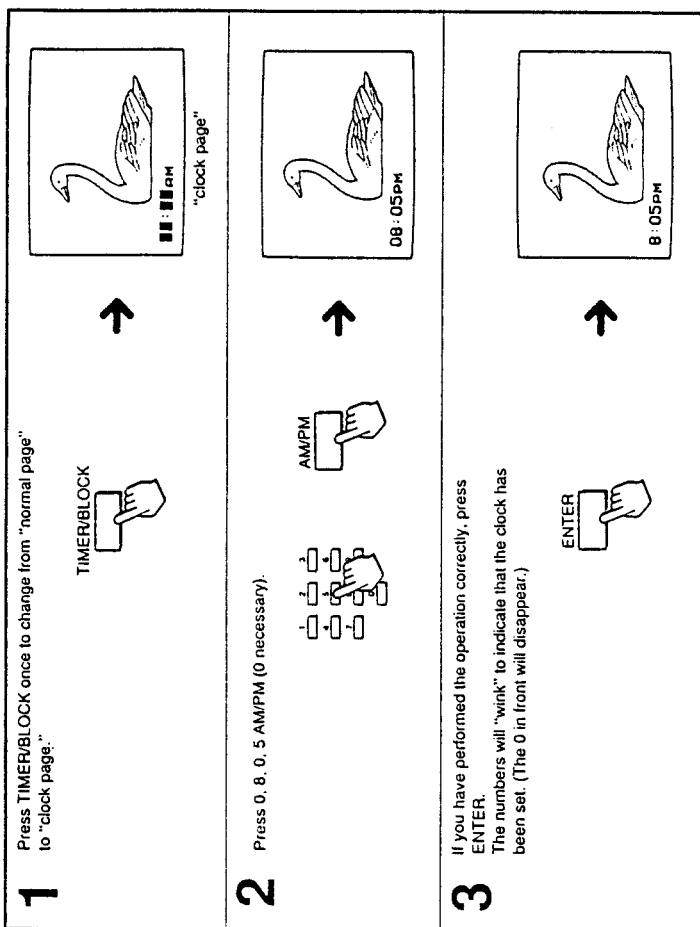
The buttons used for the above functions are located on the Remote Commander.



- All settings will be erased from the unit's memory if the unit is unplugged, or if a power failure occurs.
- The **TIMER** and **BLOCK** will operate only if the clock is set correctly.
- If the **TIMER** and **BLOCK** are set for overlapping times on the same channel, the blocked channel will appear on the screen at the time set on the **TIMER**.

How to Set the Internal Clock

Example: To set the clock to 8:05 PM



If you have made a mistake, press **CLEAR** and return to step 2. The "AM/PM" indication will disappear after 2 seconds.

To summon "TIMER page," press **TIMER/BLOCK** before the "AM/PM" indication disappears.

To return to "normal page," press **TIMER/BLOCK** after the "AM/PM" indication has disappeared.

To reset the clock, summon "clock page" and press **CLEAR** before the "AM/PM" indication disappears. Then follow the steps above from step 2.
12:00 AM stands for midnight.
12:00 PM stands for noon.

How to Set the Channel BLOCK

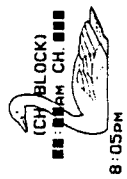
Make sure that the clock has been set correctly before setting the channel BLOCK.

Example: To set the BLOCK for a program which begins at 9:30 AM on channel 8

1

Press TIMER/BLOCK three times to change from "normal page" to "BLOCK page."



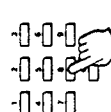


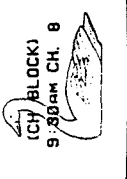
(CH) BLOCK
8:05PM CH. 8

↑

2

Press 0, 9, 3, 0, ENTER (0 not necessary). Numbers will "wink" to indicate that the time has been set. Press 8, ENTER (0 not necessary). Numbers will "wink" to indicate that the channel has been set.





(CH) BLOCK
9:30AM CH. 8

↑

ENTER



The BLOCK has now been set.

If you have made a mistake, press CLEAR and return to step 2.

At the preset time, the picture of the selected channel will be blocked from view and the sound will be muted. A red "BLOCKED" indication will appear on the screen while the channel is blocked. Normal reception will be resumed after 12 hours.

To return to normal reception while the channel is blocked, recall "BLOCK page" and press CLEAR.

The BLOCK setting blocks a specified channel for the same 12 hour period everyday.

To clear BLOCK setting, summon "BLOCK page" and press CLEAR. To reset, clear the setting and follow the steps above from step 2.

How to Set the Program Start TIMER

Make sure that the clock has been set correctly before setting the program start TIMER.

Example: To set the TIMER for a program which begins at 10:30 PM on channel 12

1

Press TIMER/BLOCK once to change from "normal page" to "clock page."





8:05PM

↑

2

Press TIMER/BLOCK before the "AM/PM" indication disappears and summon "TIMER page."



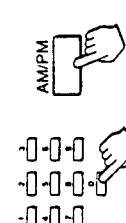


(TIMER SET)
10:30PM CH. 12

↑

3

Press 1, 0, 3, 0, AM/PM, ENTER. Numbers will "wink" to indicate that the time has been set.





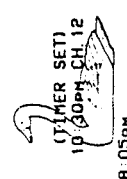
(TIMER SET)
10:30PM CH. 12

↑

4

Press 1, 2, ENTER (0 not necessary). Numbers will "wink" to indicate that the channel has been set.





(TIMER SET)
10:30PM CH. 12

↑

ENTER



The TIMER lamp will light up to indicate that the TIMER has been set.

If you have made a mistake, press CLEAR and return to step 3.

At the preset time, the selected channel will appear on the screen and the TIMER lamp will go out. The TIMER will operate whether you are watching a TV program or a VCR playback, or even if you have turned off the TV.

If no button is pressed within 2 hours after the preset time, an "OFF" indication will appear on the screen for 1 minute. If a button is still not touched during the 1 minute, the TV will turn off automatically as a safety precaution.

The TIMER operates only once, but the time and the channel will remain in the unit's memory.

If you want to preset the same channel at the same time for a future date, press OFF/REPEAT. The TIMER lamp will light up to indicate that the TIMER has been reactivated.

If you want to deactivate the TIMER, press OFF/REPEAT again so that the TIMER lamp goes out. It is not necessary to summon "TIMER page" to use the OFF/REPEAT button. Furthermore, this button is effective even if the TV has been turned off.

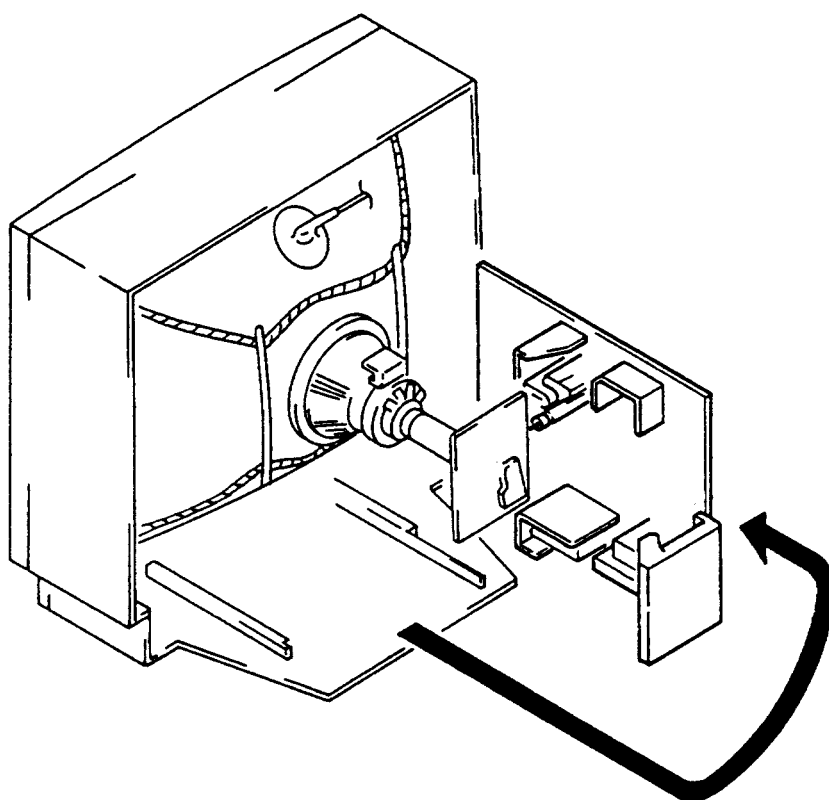
To clear the TIMER setting, summon "TIMER page" and press CLEAR.

To reset, clear the setting and follow the steps from step 3.

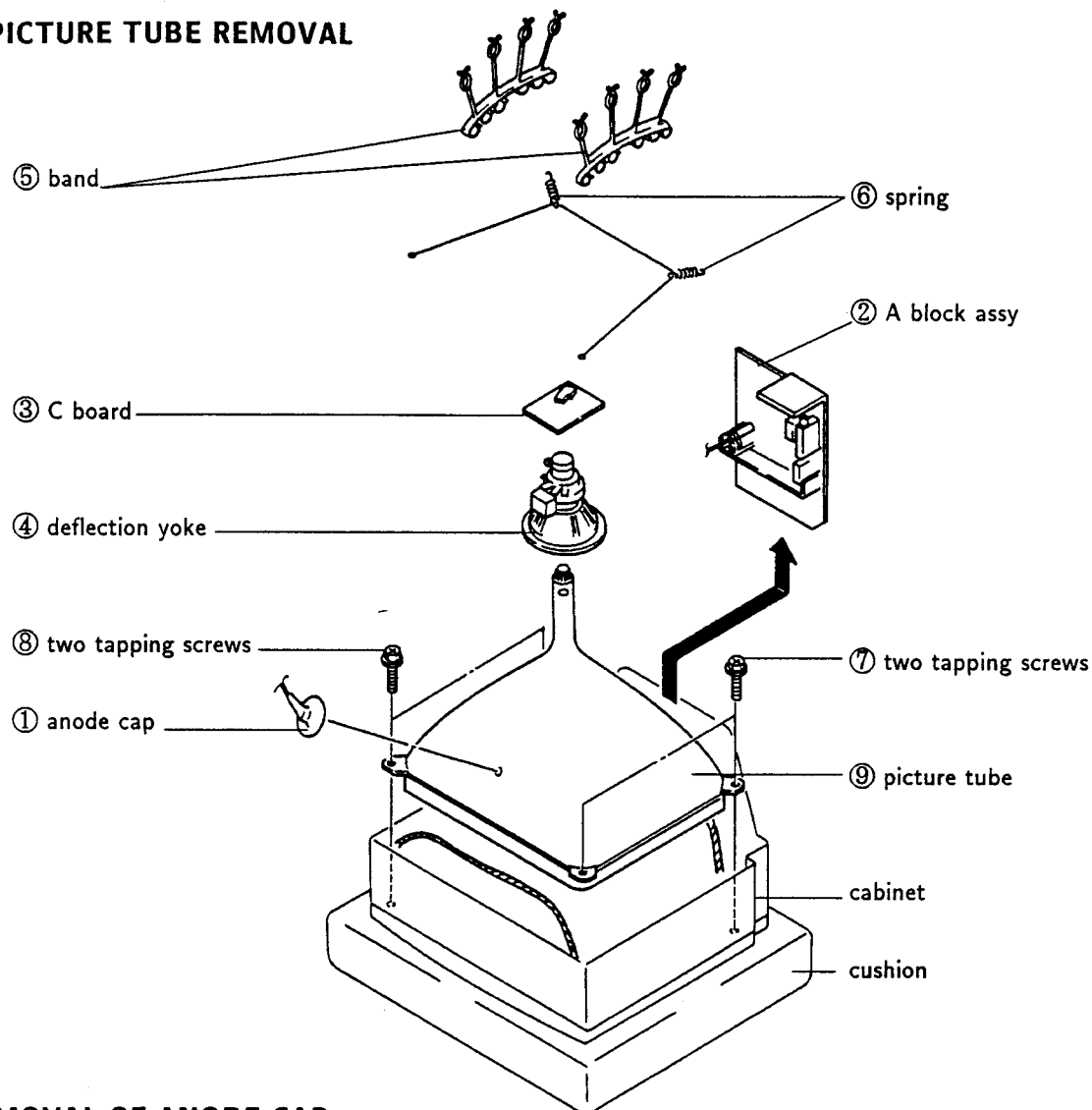
KV-19TR10/19TR20
RM-780/RM-781

SECTION 2 **DISASSEMBLY**

2-1. SERVICE POSITION

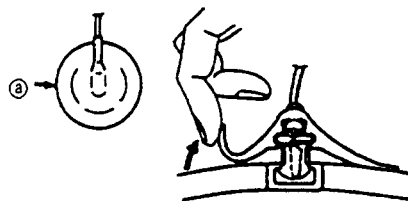


2-2. PICTURE TUBE REMOVAL

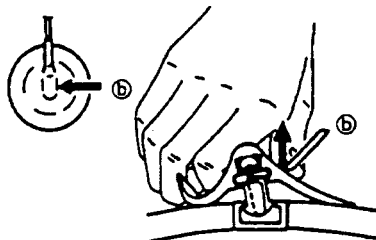


• REMOVAL OF ANODE-CAP

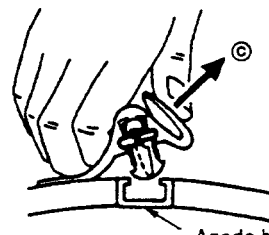
• REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ②.



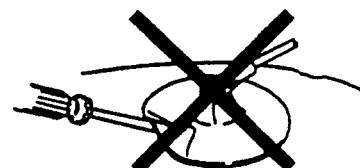
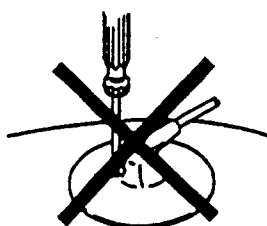
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ②.



③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ③.

• HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.



SECTION 3 SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switch should be set as follows unless otherwise noted :

PICTURE control MAXIMUM
BRIGHTNESS control MAXIMUM

Perform the adjustments in order as follows :

1. Beam Landing
2. Convergence
3. Focus
4. Sub Brightness
5. White Balance

Note : Test Equipment Required.

1. Color-bar/Pattern Generator
2. Degausser

3-1. BEAM LANDING

Preparation.

- Feed in the white pattern.
 - Before starting, degauss the entire screen.
1. Loosen deflection yoke screw.
 2. Adjust purity control as shown in Fig.3-1.
 3. Slide deflection yoke as far forward as it will go.
 4. Turn the raster signal of the pattern generator to red.
 5. Adjust purity control to center vertical red band as shown in Fig.3-2.
 6. Slide deflection yoke back for a uniform red screen.
 7. Check green and blue rasters for uniformity by performing the same way as steps 4, 5 and 6.
 8. Tighten the deflection yoke screw.
 9. Check if mislanding appears at corners a—d as shown in Fig. 3-3. If mislanding is observed, correct it as shown in Fig. 3-3.
 10. Confirm that beam landing is correct when the receiver is faced in all directions.

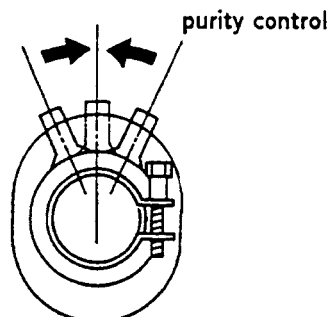


Fig. 3-1.

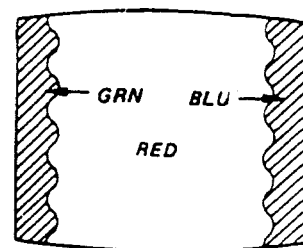


Fig. 3-2.

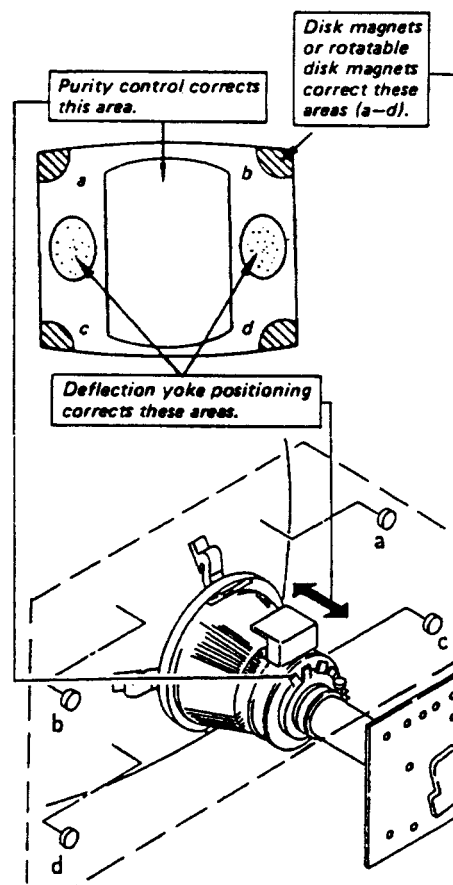
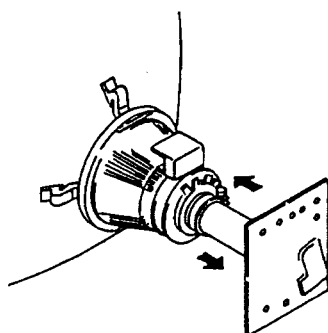


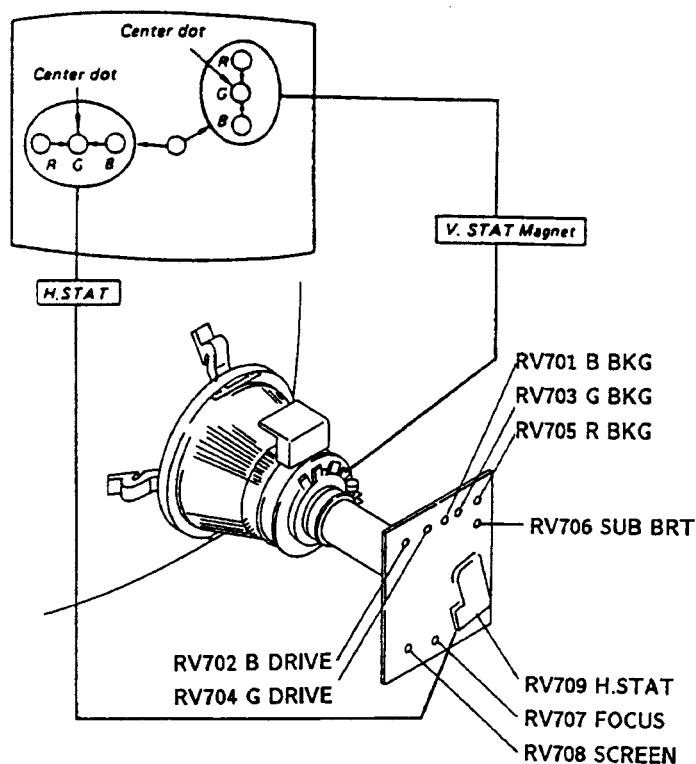
Fig. 3-3.

3-2. CONVERGENCE

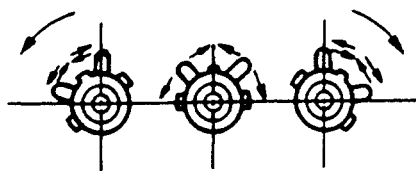
Preparation :

- Before starting, perform FOCUS, H. SIZE and V. SIZE adjustments.
- Set BRIGHTNESS control to fully counterclock - wise.
- Feed in the dot pattern.

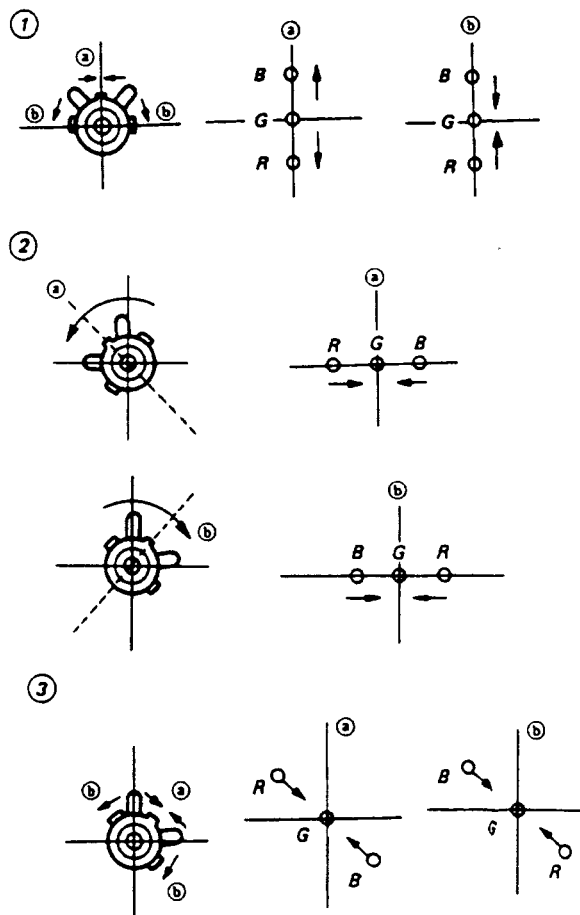
(1) Horizontal and Vertical Static Convergence



1. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen.
(Horizontal movement)
 2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen.
(Vertical movement)
 3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below.
(In this case, H. STAT VR and V. STAT magnet effect each other.)
- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



4. When the V. STAT magnet is moved in the direction of arrow (a) and (b), Red, Green and Blue dots move as shown below.

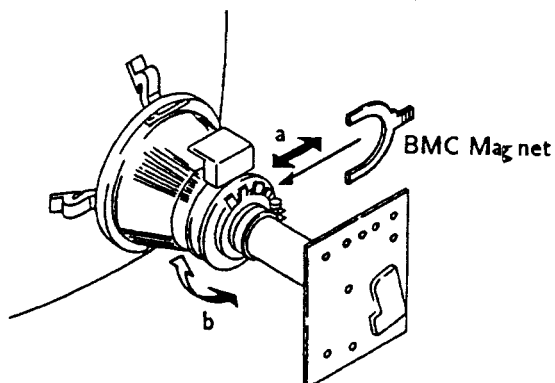


If blue dot dose not coincide with red and green dots, perform following steps.

Move BMC magnet (a) to correct insufficient H. static convergence.

Rotate BMC magnet (b) to correct insufficient V. static convergence.

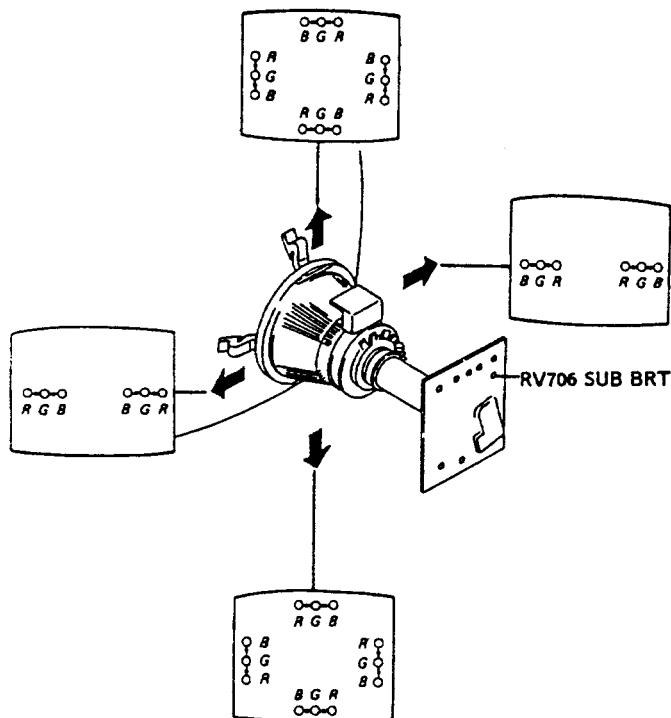
In either case, repeat Beam Landing Adjustment.



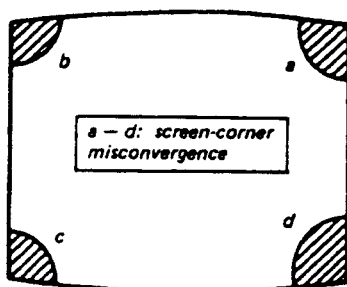
(2) Dynamic Convergence Adjustment

Preparation :

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.
- 1. Loosen deflection yoke screw.
- 2. Remove deflection yoke spacers.
- 3. Move the deflection yoke for best convergence as shown below.
- 4. Tighten the deflection yoke screw.
- 5. Install the deflection yoke spacers.



(3) Screen-corner Convergence



3-3. FOCUS (G4)

Adjust FOCUS control for a best picture.

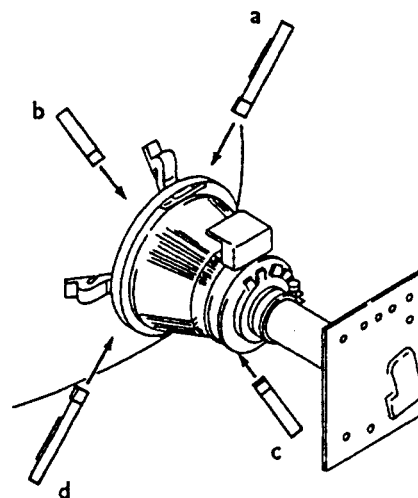
3-4. SUB BRT (RV706)

1. Feed in a cross-hatch pattern.
2. Set PICTURE and BRIGHTNESS to minimum.
3. Turn RV706 (SUB BRT) slowly to obtain a faintly visible cross-hatch.

3-5. WHITE BALANCE

Feed in the cross-hatch pattern.

1. Set BRIGHTNESS and PICTURE controls to minimum.
2. Turn RV702 (B.DRIVE) and RV704 (G.DRIVE) fully counterclockwise.
3. Set RV705 (R.BKG), RV703 (G.BKG), RV701 (B.BKG) and RV706 (SUB BRT) to mechanical center.
4. Turn RV708 (SCREEN) slowly to obtain a faintly visible cross-hatch. Note the color that first becomes visible by turning RV708. Do not turn a BKG control for this color.
5. Adjust the other two BKG controls for best white balance (neutral gray) of the faint cross-hatch.
6. Set BRIGHTNESS and PICTURE controls to maximum. Observe the screen and adjust the DRIVE controls for best white balance.
7. Repeat Steps 1 through 6 several times.



Permalloy

SECTION 4 SAFETY RELATED ADJUSTMENTS

☒ R324 CONFIRMATION METHOD (HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with ☒ on the schematic diagram).
IC601, IC301, PM501, D501, D321, C565, C563, R565, R512, R325, R324, T504, DY

1. Preparation before confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and set the PICTURE and BRIGHT controls to maximum.
- 2) Confirm that voltage of the check terminal of pin ④ of A-14 (A BOARD) is more than 126.0V DC when the set is operating normally with 120.0 ± 2.0 V AC supply.

2. Hold-down operation confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to $1300 \pm 20 \mu\text{A}$ with PICTURE and BRIGHT etc controls.
- 2) Apply DC voltage to the check terminal of pin ④ of A-14 (A BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 144.0V DC whereby the raster disappears during operation of hold-down circuit.

NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

- 3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to $30 \pm 20 \mu\text{A}$ with PICTURE and BRIGHT etc controls.
- 4) Apply DC voltage to the check terminal of pin ④ of A-14 (A BOARD) via 1T40 from the DC stabilized power source.

Confirm that the minimum voltage is less than 144.0V DC whereby the raster disappears during operation of hold-down circuit.

NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

3. Hold-down readjustment

When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R324 (a component marked with ☒).

☒ R322 CONFIRMATION METHOD (HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with ☒ on the schematic diagram).
IC301, PM501, D501, R565, R512, R322

1. Preparation before confirmation

- 1) Supply 120 ± 2.0 V AC to with variable auto-transformer.

2. Hold-down operation confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to $1300 \pm 20 \mu\text{A}$ with PICTURE and BRIGHT etc controls.
- 2) Apply DC voltage to the check terminal of pin ② of PM501 (A BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 154.0V DC whereby the raster disappears during operation of hold-down circuit.

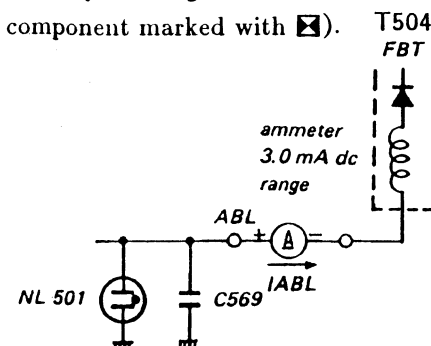
NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

- 3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to $30 \pm 20 \mu\text{A}$ with PICTURE and BRIGHT etc controls.
- 4) Apply DC voltage to the check terminal of pin ② of PM501 (A BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 158.0V DC whereby the raster disappears during operation of hold-down circuit.

NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

3. Hold-down readjustment

When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R322 (a component marked with ☒).

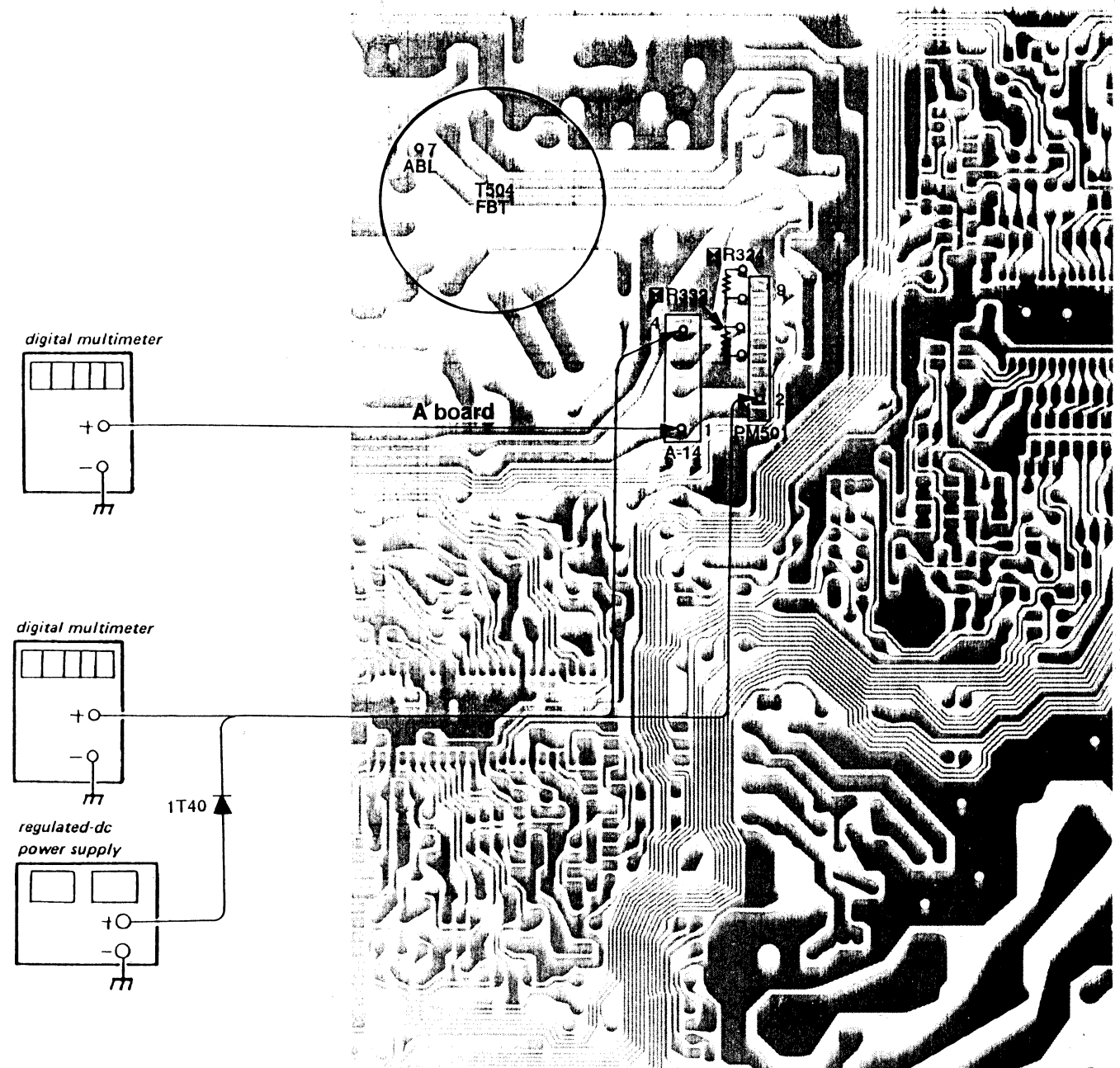


*Use a digital multimeter whose input impedance is over $100\text{M}\Omega$ when confirming the voltage of the protector terminal.

+B VOLTAGE CONFIRMATION

The following adjustments should always be performed when replacing IC601.

- 1) Supply 130 ± 2.0 V AC to with variable auto-transformer.
- 2) Receive entirely monoscope signal.
- 3) Set the PICTURE control and the BRIGHT controls in to initial reset.
- 4) Confirm the voltage of pin ① of A-14 (A BOARD) is less than 138.0V DC.
- 5) If step 4) is not satisfied, replace IC601 repeat above steps.



DOWN

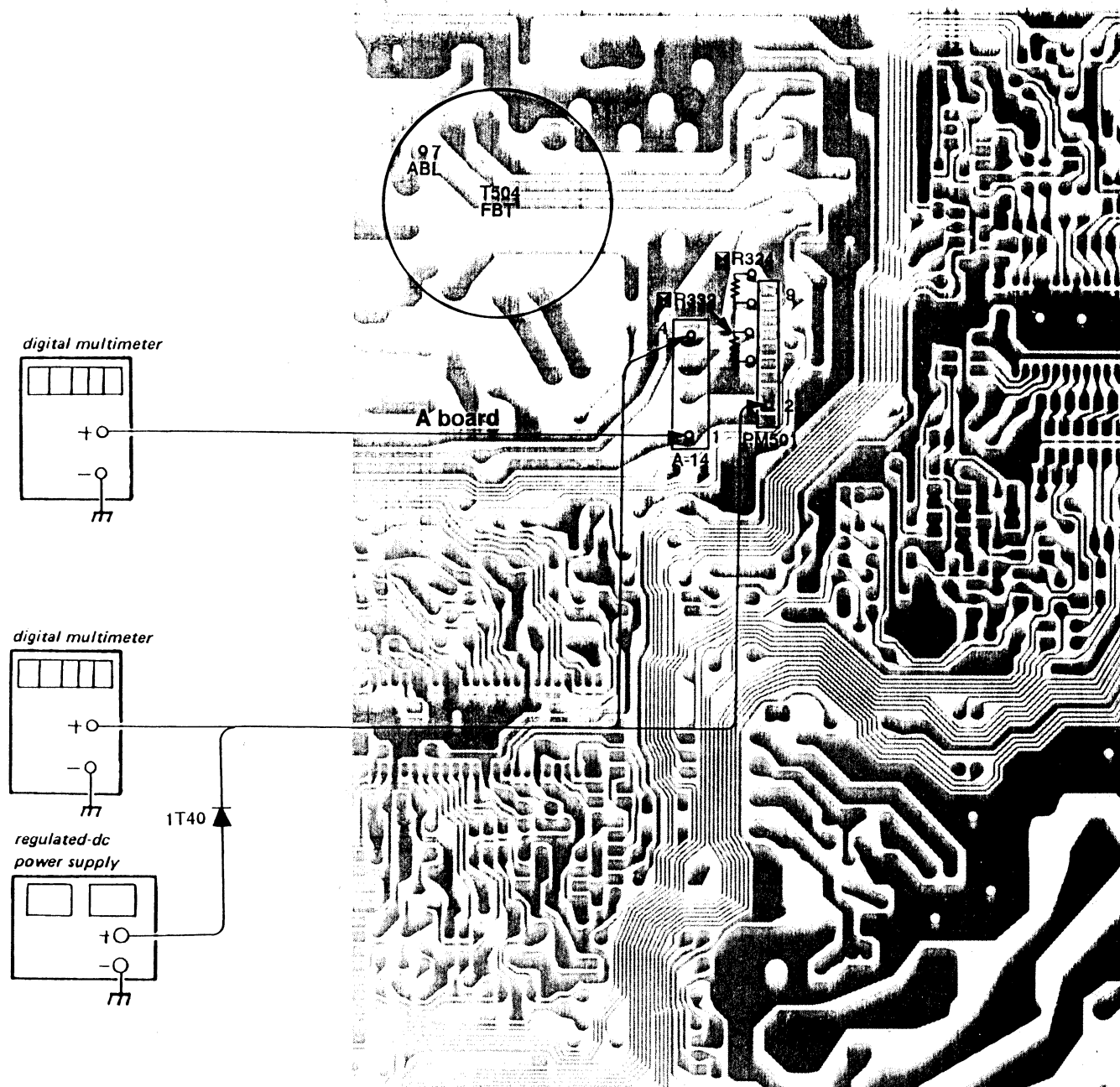
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the DC
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tage of**+B VOLTAGE CONFIRMATION**

The following adjustments should always be performed when replacing IC601.

- 1) Supply $130\pm 20V$ AC to with variable auto-transformer.
- 2) Receive entirely monoscope signal.
- 3) Set the PICTURE control and the BRIGHT controls in to initial reset.
- 4) Confirm the voltage of pin ① of A-14 (A BOARD) is less than 138.0V DC.
- 5) If step 4) is not satisfied, replace IC601 repeat above steps.

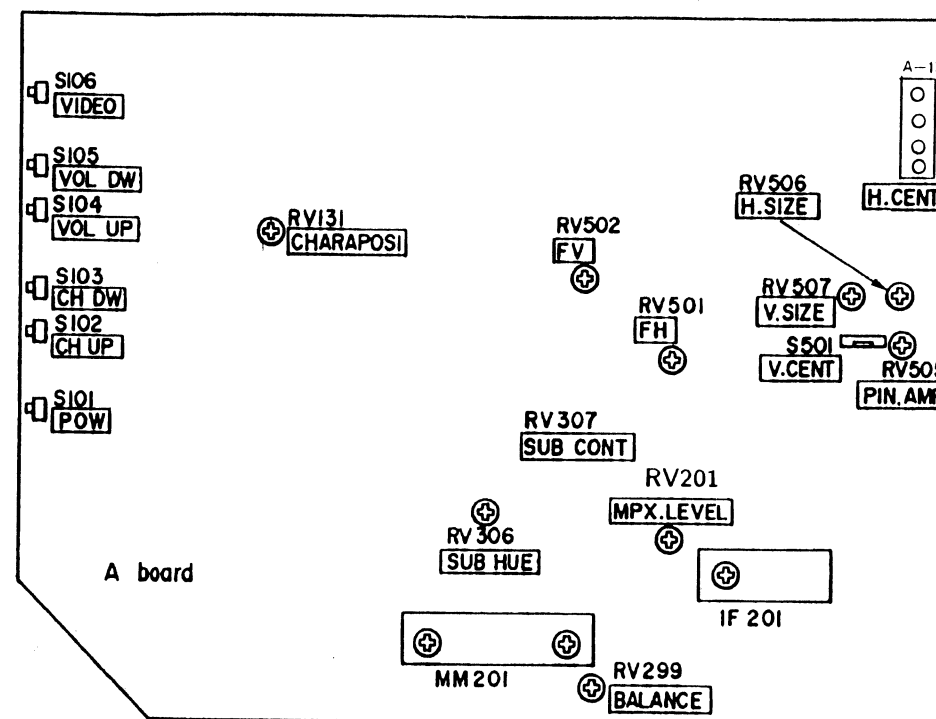


SECTION 5 CIRCUIT ADJUSTMENTS

5-1. A BOARD ADJUSTMENTS

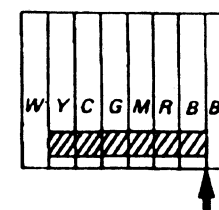
A BOARD

(COMPONENT SIDE)



BAR POSITION ADJUSTMENT (RV131)

1. Receive a color-bar signal.
2. Set the PICTURE button to maximum.
3. Adjust RV131 to the point where the arrow indicate.

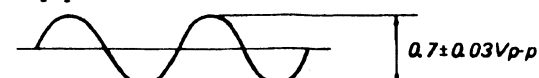


RF AGC ADJUSTMENT (IF201)

1. Receive an off-air signal.
2. Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.

MPX LEVEL ADJUSTMENT (RV201)

1. Receive 400Hz (100% modulation) sound signal.
2. Connect an oscilloscope to TP21(MPX OUT).
3. Adjust RV201 so that the MPX level is 0.7 ± 0.03 Vp-p.

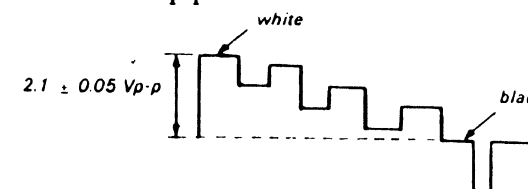


AUDIO BALANCE ADJUSTMENT (RV299)

1. Receive monoral signal.
2. Connect the dual-trace-oscilloscope at SP out Lch (K-2 connector and Rch (K-3 connector).
3. Adjust RV299 so that Lch and Rch are same level.

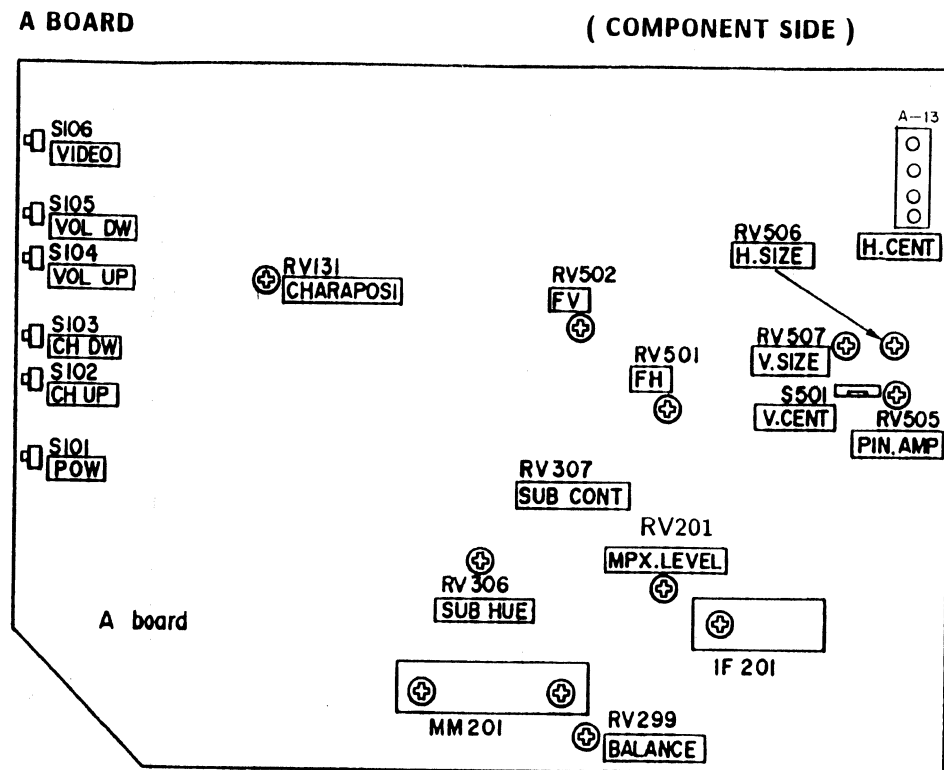
SUB CONTRAST ADJUSTMENT (RV307)

1. Receive a color-bar signal.
PICTURE MAX
BRT CENTER
COLOR MIN
2. Connect circuit between Base of Q354 and 9.3V line with a jumper wire.
3. Draw A-8 - C-3 connector (C Board).
4. Connect an oscilloscope to the pin ④ of A-8 connector (blue out).
5. Adjust RV307 (SUB CONT) so that voltage is $2.1\pm 0.05V_{p-p}$.



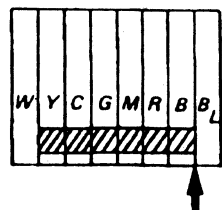
SECTION 5 CIRCUIT ADJUSTMENTS

5-1. A BOARD ADJUSTMENTS



BAR POSITION ADJUSTMENT (RV131)

1. Receive a color-bar signal.
2. Set the PICTURE button to maximum.
3. Adjust RV131 to the point where the arrow indicate.

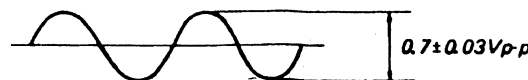


RF AGC ADJUSTMENT (IF201)

1. Receive an off-air signal.
2. Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.

MPX LEVEL ADJUSTMENT (RV201)

1. Receive 400Hz (100% modulation) sound signal.
2. Connect an oscilloscope to TP21(MPX OUT).
3. Adjust RV201 so that the MPX level is 0.7 ± 0.03 Vp-p.

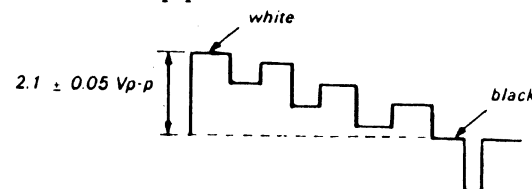


AUDIO BALANCE ADJUSTMENT (RV299)

1. Receive monoral signal.
2. Connect the dual-trace-oscilloscope at SP out Lch (K-2 connector) and Rch (K-3 connector).
3. Adjust RV299 so that Lch and Rch are same level.

SUB CONTRAST ADJUSTMENT (RV307)

1. Receive a color-bar signal.
PICTURE MAX
BRT CENTER
COLOR MIN
2. Connect circuit between Base of Q354 and 9.3V line with a jumper wire.
3. Draw A-8 - C-3 connector (C Board).
4. Connect an oscilloscope to the pin ④ of A-8 connector (blue out).
5. Adjust RV307 (SUB CONT) so that voltage is 2.1 ± 0.05 Vp-p.



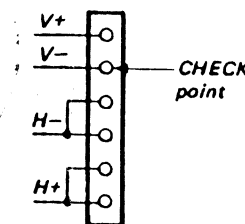
H.FREQ ADJUSTMENT (RV501)

1. Receive an off-air signal.
2. Connect circuit between pin ④ of IC301 (H IN) and pin ③ of IC301 (VCC2) with a jumper wire.
3. Connect the frequency counter across Base of Q550 and ground.
4. Adjust RV501 for $15,734\text{kHz} \pm 50\text{Hz}$ on the frequency counter.
5. Disconnect a jumper wire from IC301.

V.FREQ ADJUSTMENT (RV502)

1. Receive an off-air signal.
2. Connect circuit between pin ④ of IC301 (V IN) and pin ③ of IC301 (VCC2) with a jumper wire.
3. Connect the frequency counter across DY-1 connector (V.DY ⊖) and ground.
4. Adjust RV502 for $55.0 \pm 0.3\text{Hz}$ on the frequency counter.
5. Disconnect a jumper wire from IC301.

DY-1 connector



PIN AMP ADJUSTMENT (RV505)

Adjust pin amplification with RV505.



H.CENT ADJUSTMENT (A-13)

1. Receive a cross-hatch signal.
2. Set PICTURE and BRT to normal.
3. Adjust H.CENT (H.CENT TAP=A-13) for best picture.

V.CENT ADJUSTMENT (S501)

1. Receive a cross-hatch signal.
2. Set PICTURE and BRT to normal.
3. Adjust V.CENT (S501) for best picture.

WARNING !!

When you replace a memory IC, make sure of the functioning remote commander and proper sound with the power switch on.
If you find any troubles, take actions as shown below.

For remote commander :

Set the main power switch to OFF and press it again to turn the unit on.

For sound :

Switch the unit from MAIN to SAP to MONO mode by the MTS switch (or MTS button on the commander) to make sure of sound with MONO mode. Note that the sound is of proper volume and the speaker on/off switch is set to ON.

H.SIZE ADJUSTMENT(RV506)

1. Receive across-hatch signal.
2. Adjust RV506 for 15.0 divisions.

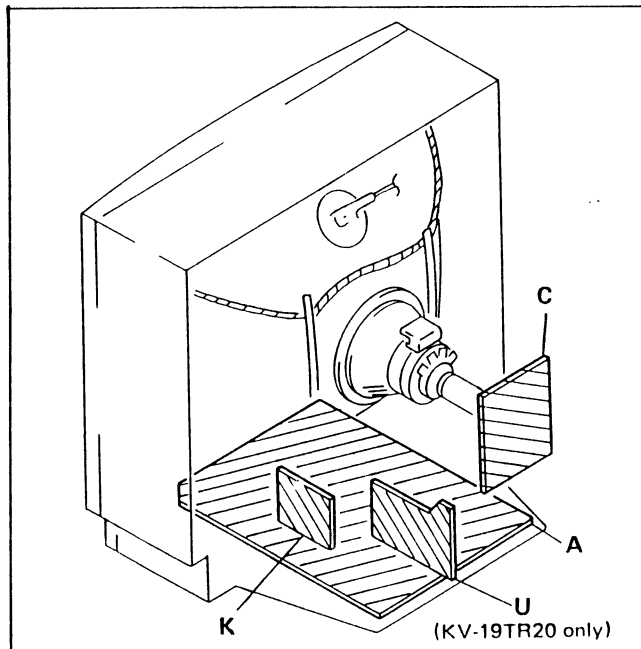
V.SIZE ADJUSTMENT(RV507)

1. Receive a cross-hatch signal.
2. Adjust RV507 for 11.25 divisions.

SECTION 6

DIAGRAMS

6-1. CIRCUIT BOARDS LOCATION



6-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS — Conductor Side —

Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:

- All capacitors are in μF unless otherwise noted. p: μF 50 WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms. $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{K}\Omega$
- Indication of resistance, which does not have one for rating electrical power is as follows.

Pitch: 5 mm
Rating electrical power: 1/4W

- $\square$: nonflammable resistor.
- Δ : internal component.
- $\square$: panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by $\square$ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components indicated by $\square$ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by $\square$ and repeat the adjustment until the specified value is achieved. (Refer to R322, 324 adjustment on page 15)

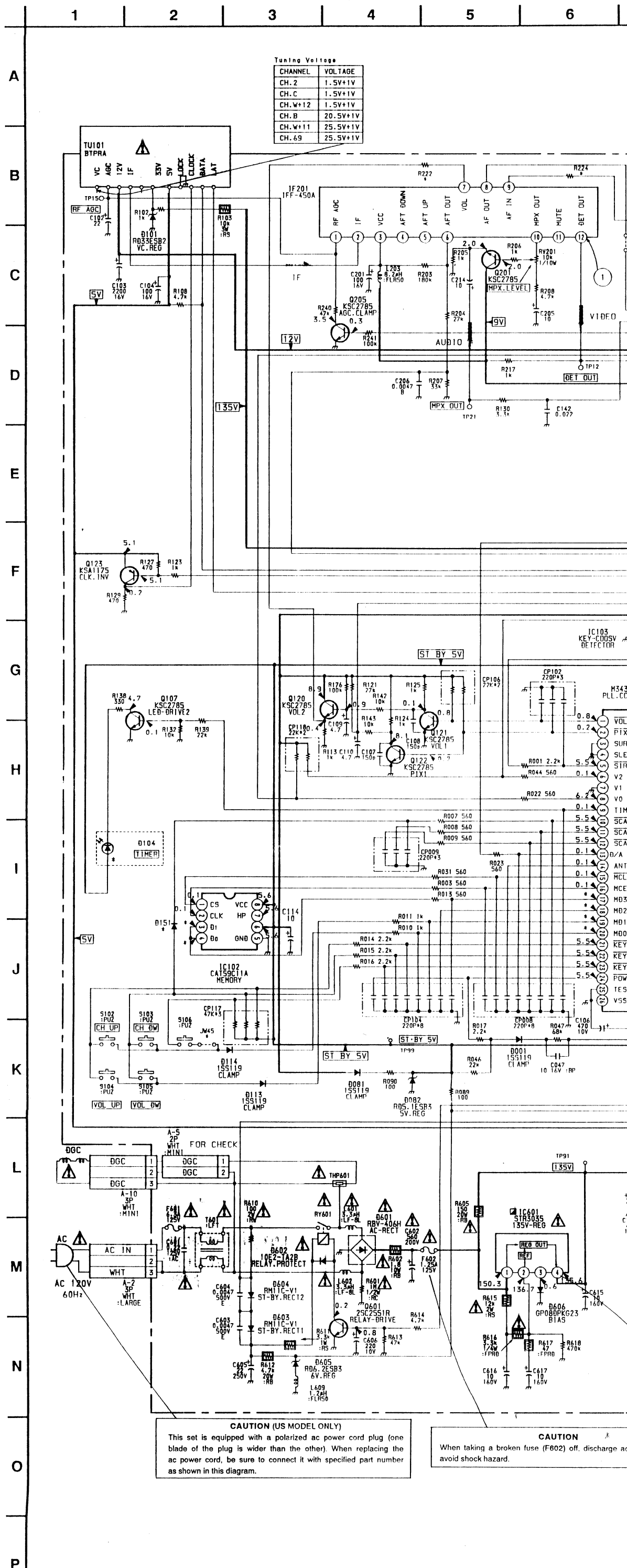
When replacing the part in below table, be sure to perform the related adjustment.

Part replaced ($\square$)	Adjustment ($\square$)
IC301, PM501, D501, R565, R512, R322	R322
IC601, IC301, PM501, D501, D321, C565, C563, R565, R512, R325, R324, T504, DY	R324

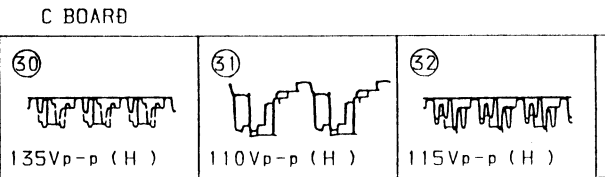
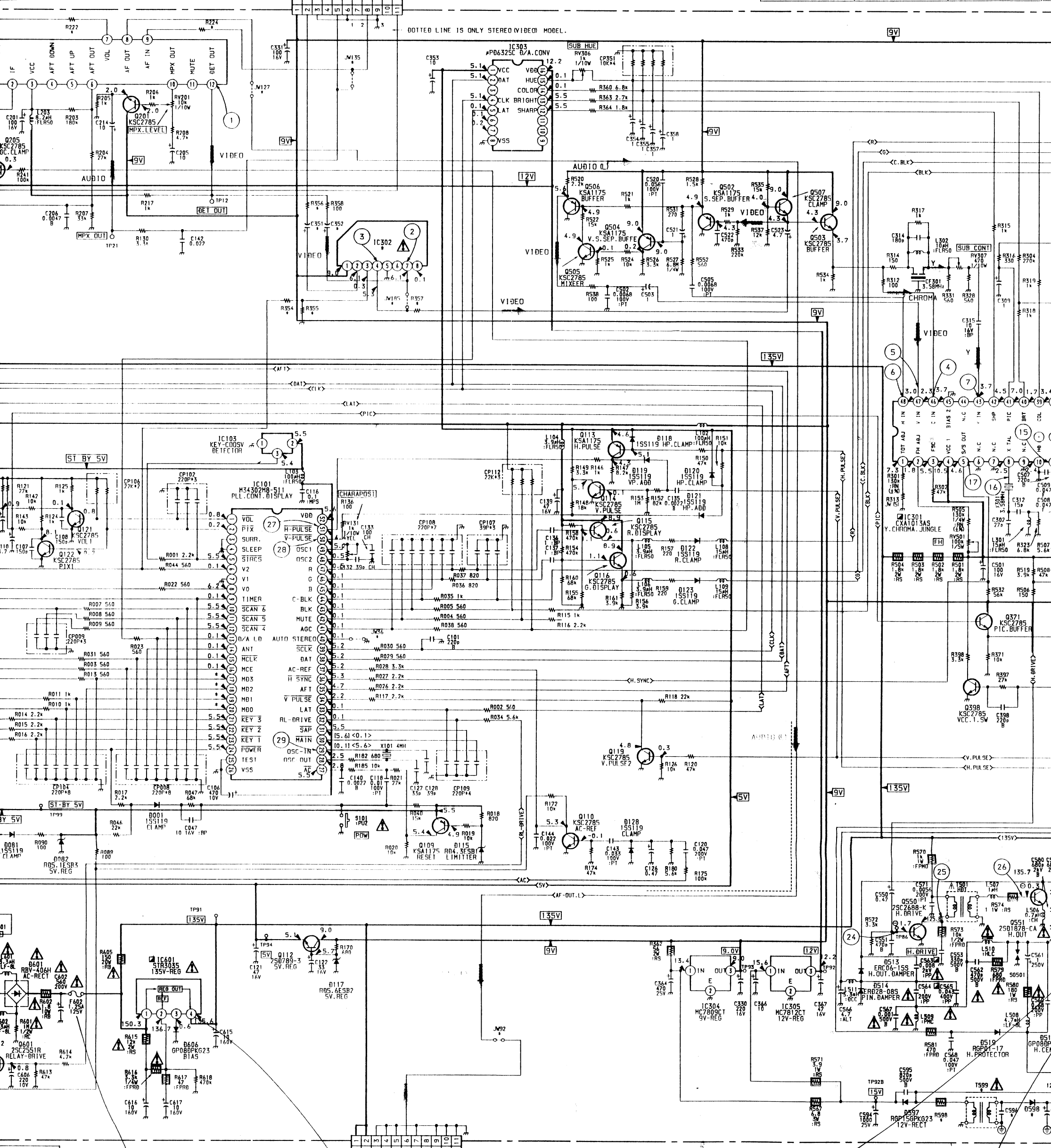
Reference information

RESISTOR	RN	: METAL FILM
	RC	: SOLID
	FPRD	: NONFLAMMABLE CARBON
FUSE	RS	: NONFLAMMABLE FUSIBLE
	RB	: NONFLAMMABLE METAL OXIDE
	RW	: NONFLAMMABLE CEMENT
	*	: NONFLAMMABLE WIREWOUND
	*	: ADJUSTMENT RESISTOR
COIL	LF-8L	: MICRO INDUCTOR
CAPACITOR	TA	: TANTALUM
	PS	: STYROL
	PP	: POLYPROPYLENE
	PT	: MYLAR
	MPS	: METALIZED POLYESTER
	MPP	: METALIZED POLYPROPYLENE
	ALB	: BIPOLAR
	ALT	: HIGH TEMPERATURE
	ALR	: HIGH RIPPLE

- Readings are taken with a color-bar signal input.
- Readings are taken with a 10 M Ω digital multimeter.
- Voltage are dc with respect to ground unless otherwise noted.
- Voltage variations may be neted due to normal production tolerances.
- $\square$: B+ bus.
- $\rightarrow$: signal path.



AGE
+IV
+IV
+IV
+IV
+IV
+IV



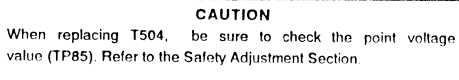
cord plug (one
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ified part number

CAUTION
When taking a broken fuse (F602) off, discharge across C602 to avoid shock hazard.

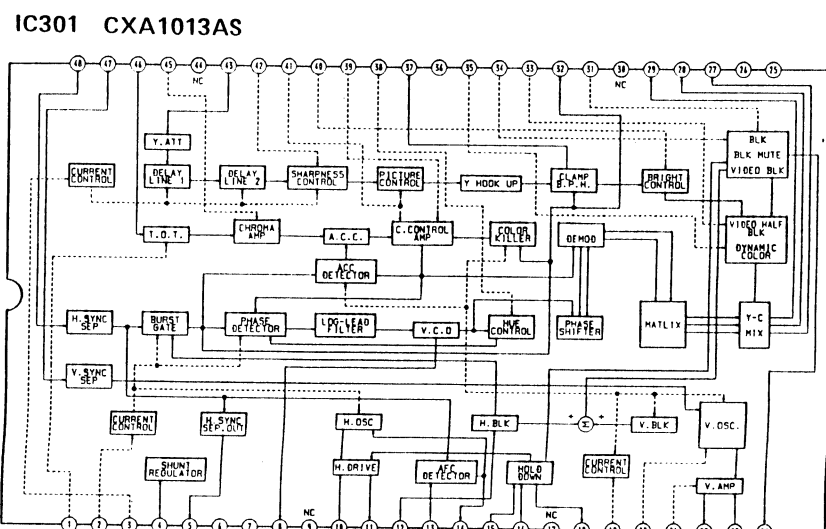
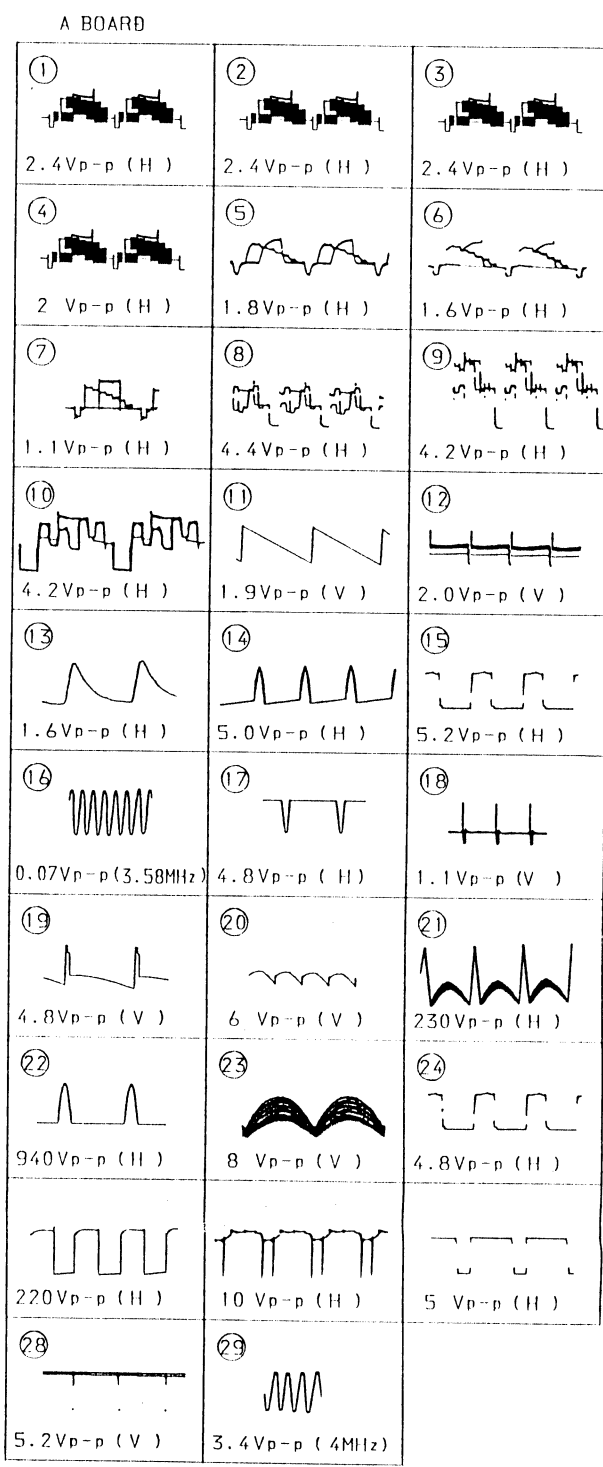
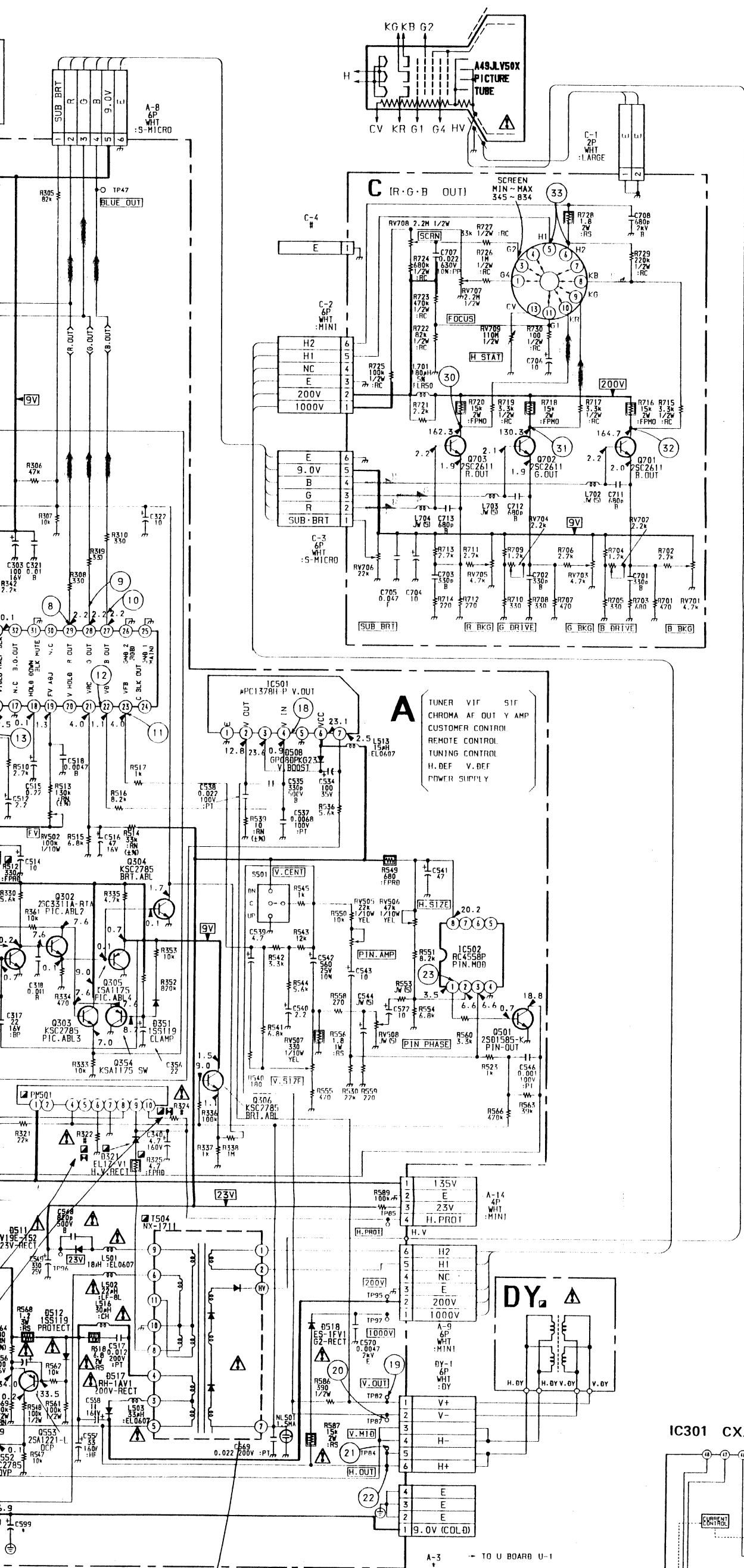
CAUTION
When replacing IC601, be sure to check the test point voltage value (TP91). Refer to the Safety Adjustment Section.

See page 15

See page 15



When replacing T504, be sure to check the point voltage value (TP85). Refer to the Safety Adjustment Section.



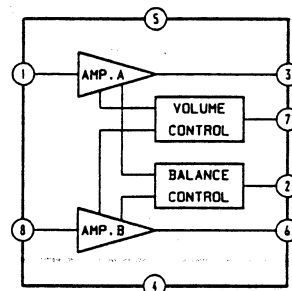
KV-19TR10/19TR20
RM-780/RM-781

KV-19TR10/19TR20
RM-780/RM-781

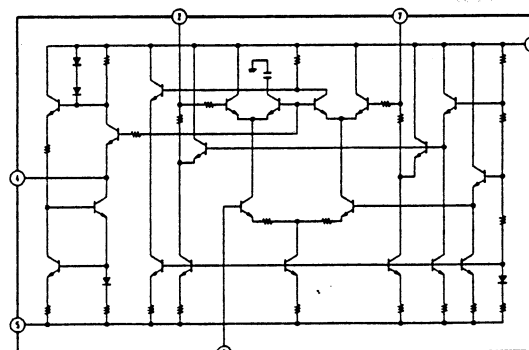
A MOUNT VARIATION LIST

REF	KV-19TR10	KV-19TR20	REF	KV-19TR10	KV-19TR20
R130	3.3K	3.3K	A-1	---	11P
R205	1.0K	1.0K	A-3	---	4P
R222	1.0K	1.0K	S106	---	S106
R224	1.0K	1.0K	T599	---	T599
R354	---	100	D151	1SS119	---
R355	---	22.0K	D598	---	BRB43-04
R356	---	100	D599	---	RD10ES82
R357	JW	100	Q201	KSC2785	KSC2785
R398	---	4.8	Q599	---	2SD789-4
R599	---	1.5K			
C142	0.002	0.002	REF	KV-19TR10	KV-19TR20
C205	10	10	IC302	---	CX20061-GG
C214	10/16	JW			
C351	---	47/16			
C352	JW	47/16			
C596	---	0.0033 630V			
C597	---	220 /35			
C598	---	33/16			
C599	---	220 /16			

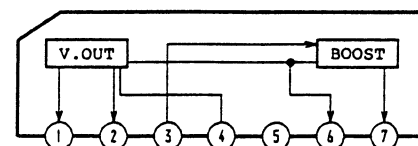
IC203 MB3110A



IC302 CX20061



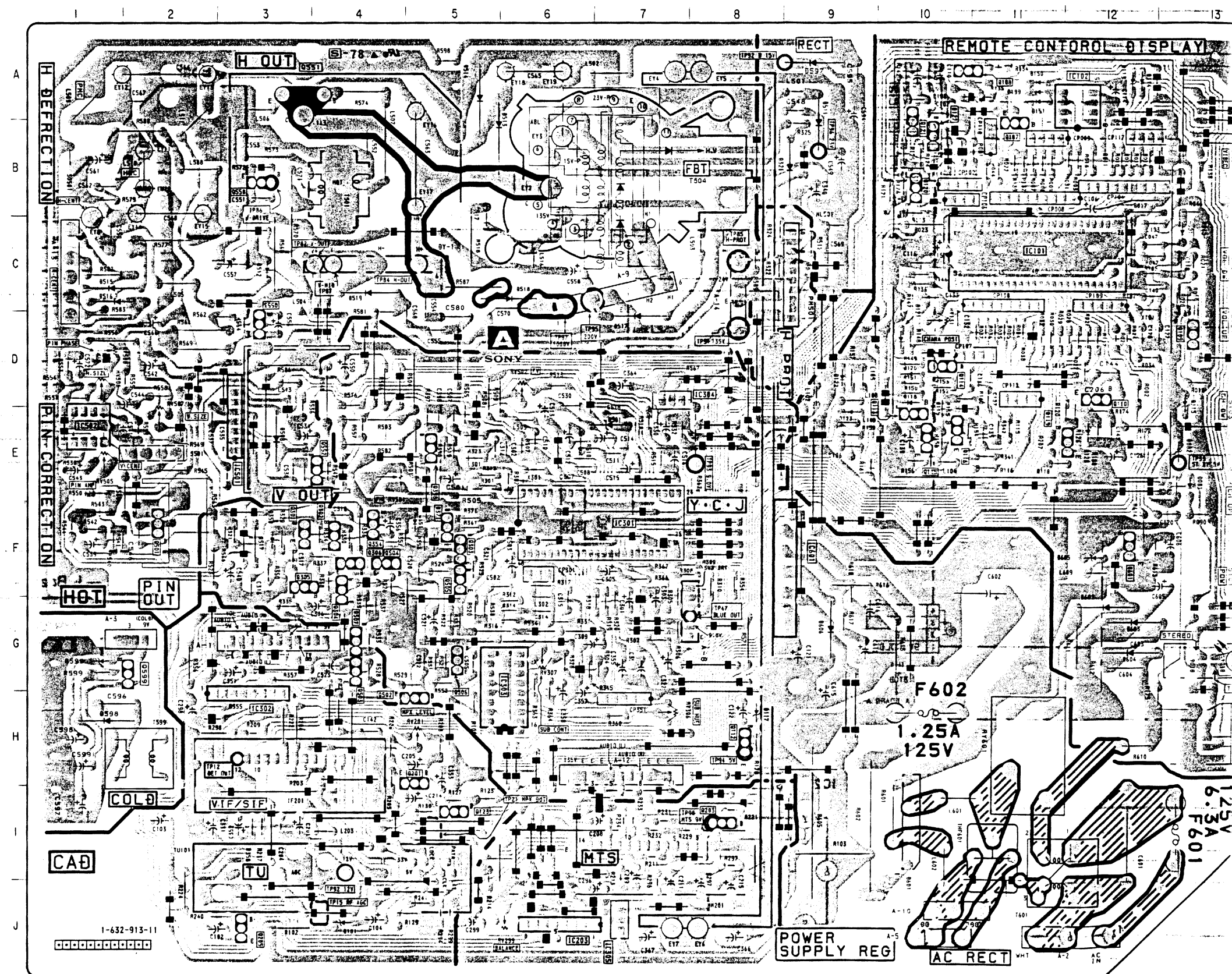
IC501 UPC1378H-P



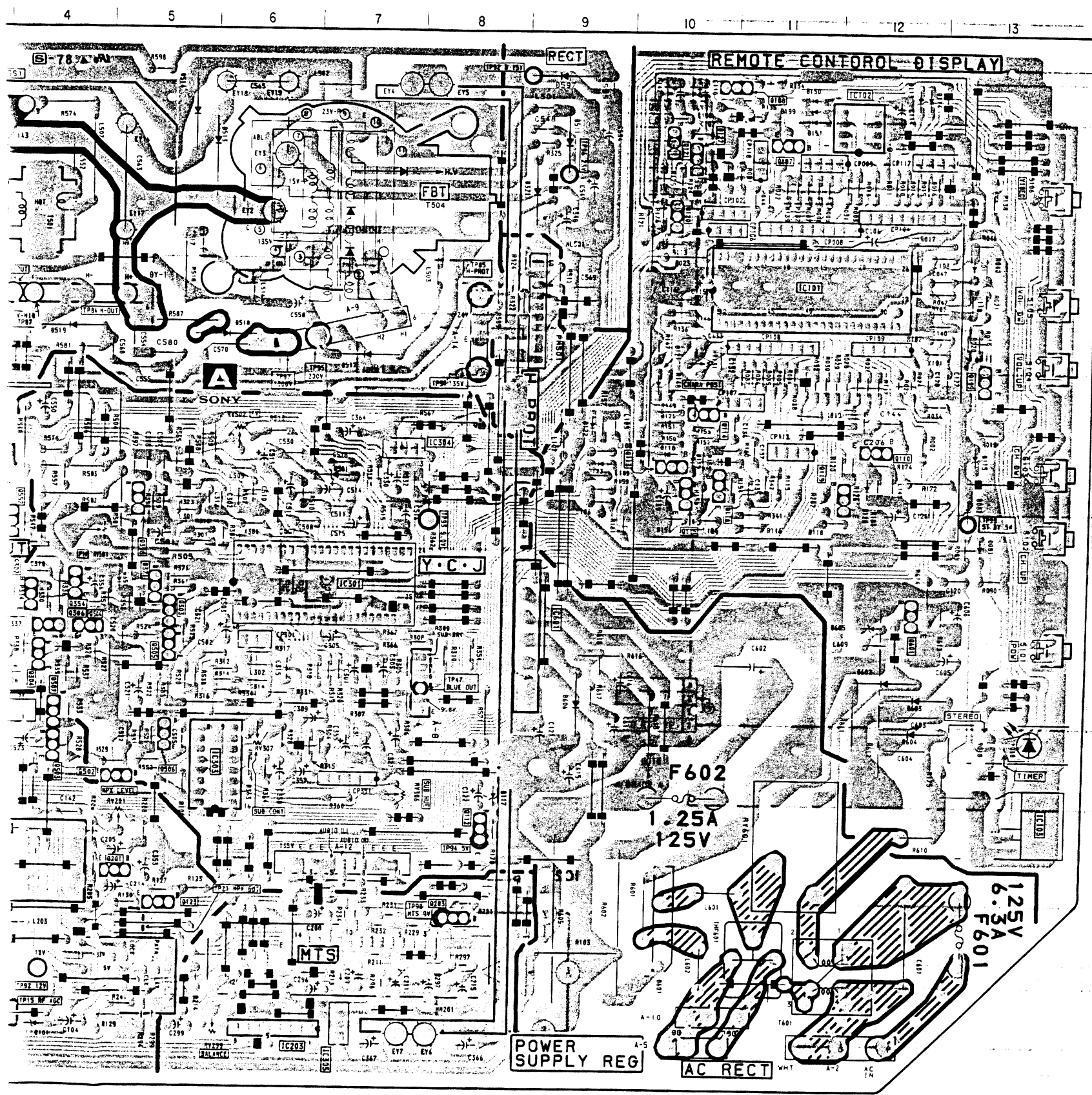
A

(TUNER VIF, SIF, CHROMA, AF OUT, Y AMP, CUSTOMER CONTROL, REMOTE CONTROL, TUNING CONTROL, H. DEF, V. DEF, POWER SUPPLY)

— A Board —



AMP, CUSTOMER CONTROL,
DEF, V.DEF, POWER SUPPLY

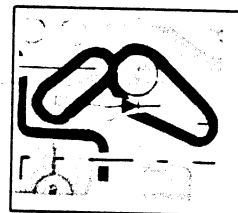
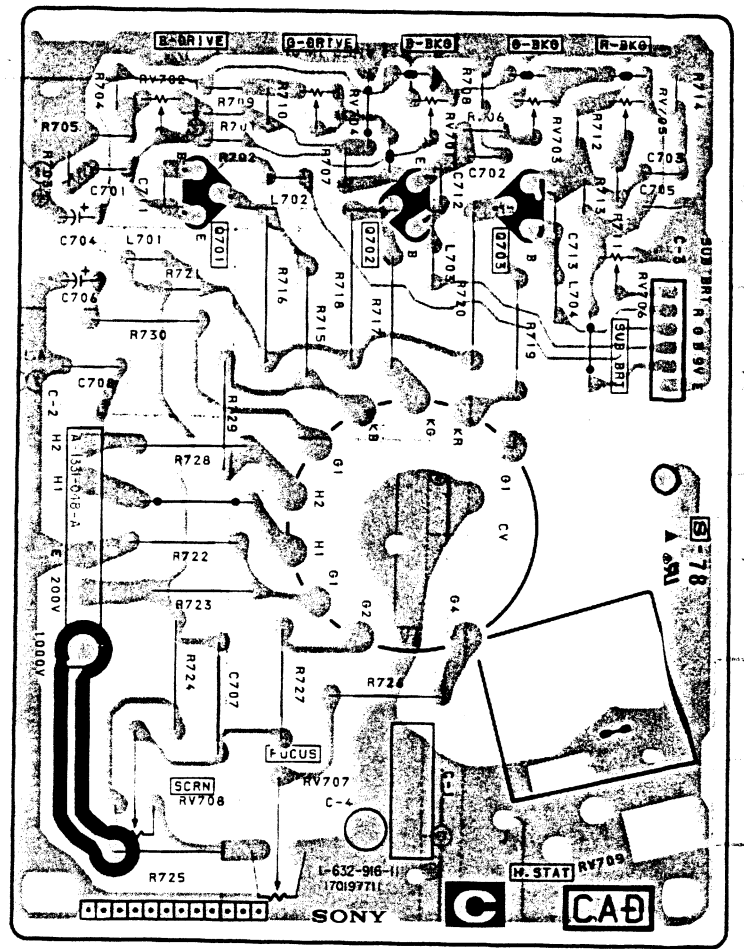


A BOARD

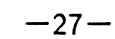
DIODE		IC		RV	
0101	B-9	IC101	C-4	RV101	C-3
0103	C-1	IC102	B-4	RV301	G-5
0113	E-1	IC103	B-1	RV302	F-5
0114	0-1	IC104	F-4	RV303	F-3
0115	0-5	IC105	0-7	RV401	F-7
0126	B-1	IC201	B-10	RV402	E-8
0127	B-1	IC301	H-4	RV501	H-3
0128	A-8	IC401	F-7	RV502	G-5
0241	C-8	IC402	F-8	RV503	H-7
0245	G-6	IC403	F-6	RV504	H-6
0251	0-8	IC501	J-7		
0301	J-6	IC601	E-12		
0317	J-6				
0401	G-9				
0402	G-7				
0403	I-2				
0405	F-8				
0408	G-8				
0501	I-7				
0502	H-8				
0504	F-11				
0505	F-11				
0508	E-10				
0511	G-12				
0512	J-11				
0513	H-10				
0514	J-12				
0561	G-12				
0601	B-11				
0602	C-11				
0603	C-12				
0604	C-13				
0605	A-6				
0606	C-5				
0607	A-10				
0608	A-11				
0609	B-10				
		TRANSISTOR			
		Q109	0-5		
		Q110	A-7		
		Q111	F-3		
		Q113	0-2		
		Q114	0-3		
		Q115	F-2		
		Q116	E-3		
		Q118	C-1		
		Q120	C-6		
		Q121	B-6		
		Q122	C-2		
		Q241	0-7		
		Q250	0-8		
		Q251	0-8		
		Q252	0-8		
		Q301	F-2		
		Q401	F-7		
		Q402	F-8		
		Q403	I-2		
		Q404	E-7		
		Q405	E-7		
		Q407	I-2		
		Q408	H-2		
		Q409	J-2		
		Q410	I-2		
		Q411	G-6		
		Q460	I-3		
		Q501	I-9		
		Q502	I-10		
		Q561	F-13		
		Q562	H-8		
		Q601	B-10		

C (R-G-B OUT)

C Board



NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.



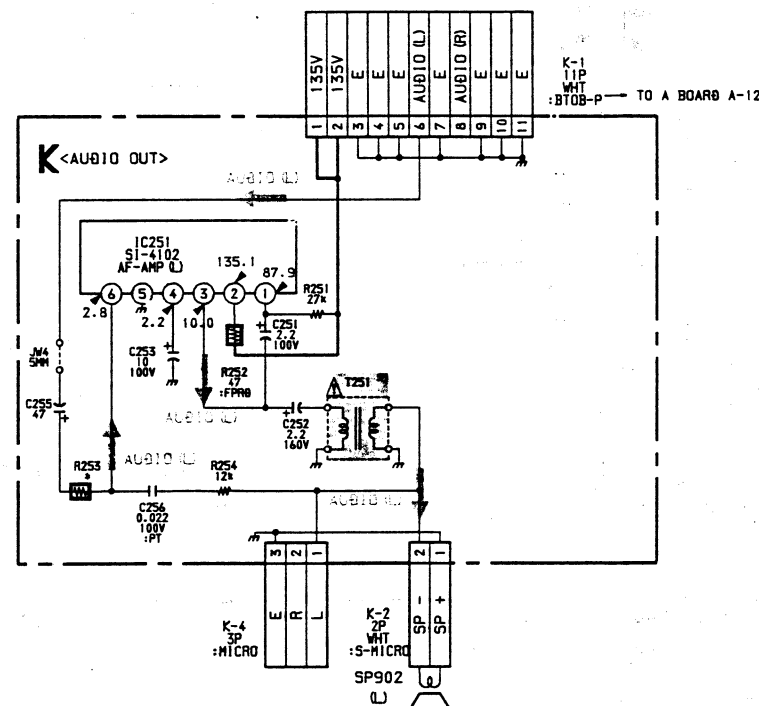
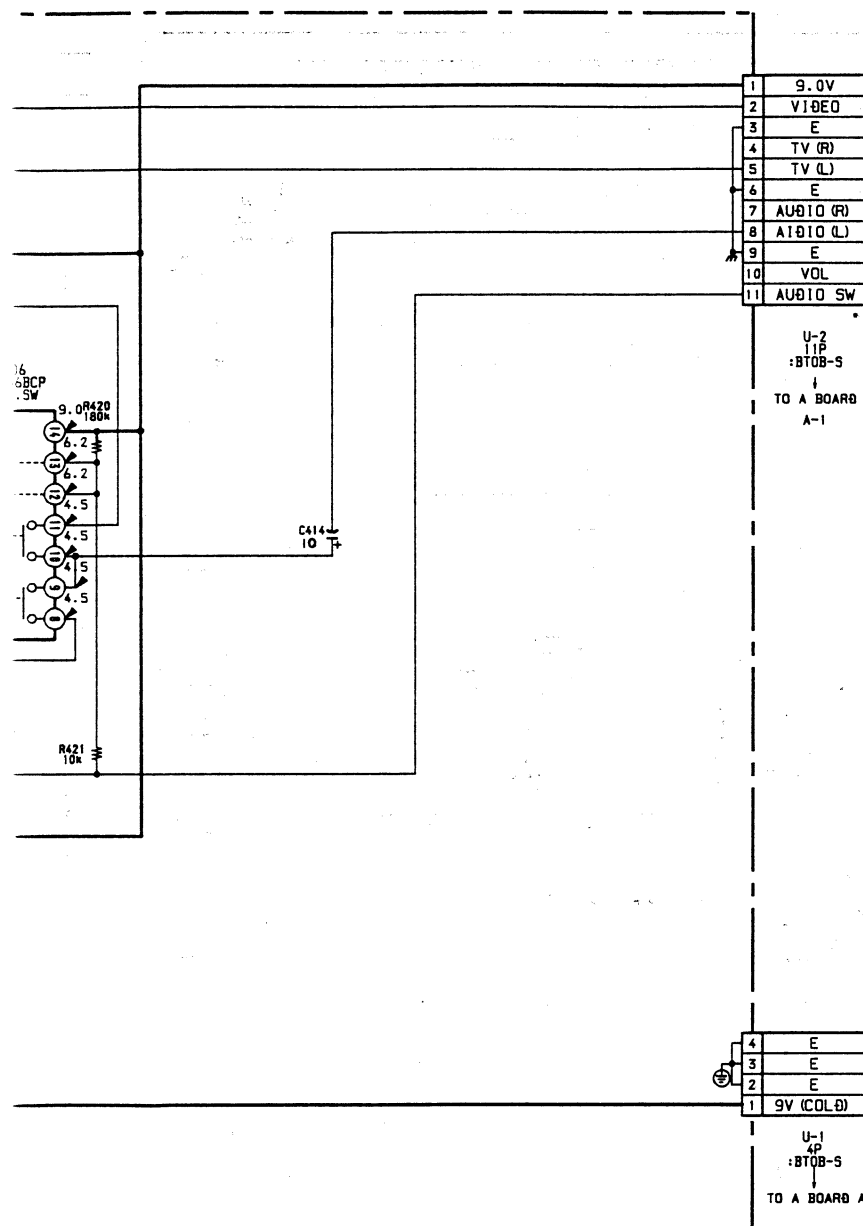
KV-19TR10/19TR20
RM-780/RM-781

KV-19TR10/19TR20
RM-780/RM-781

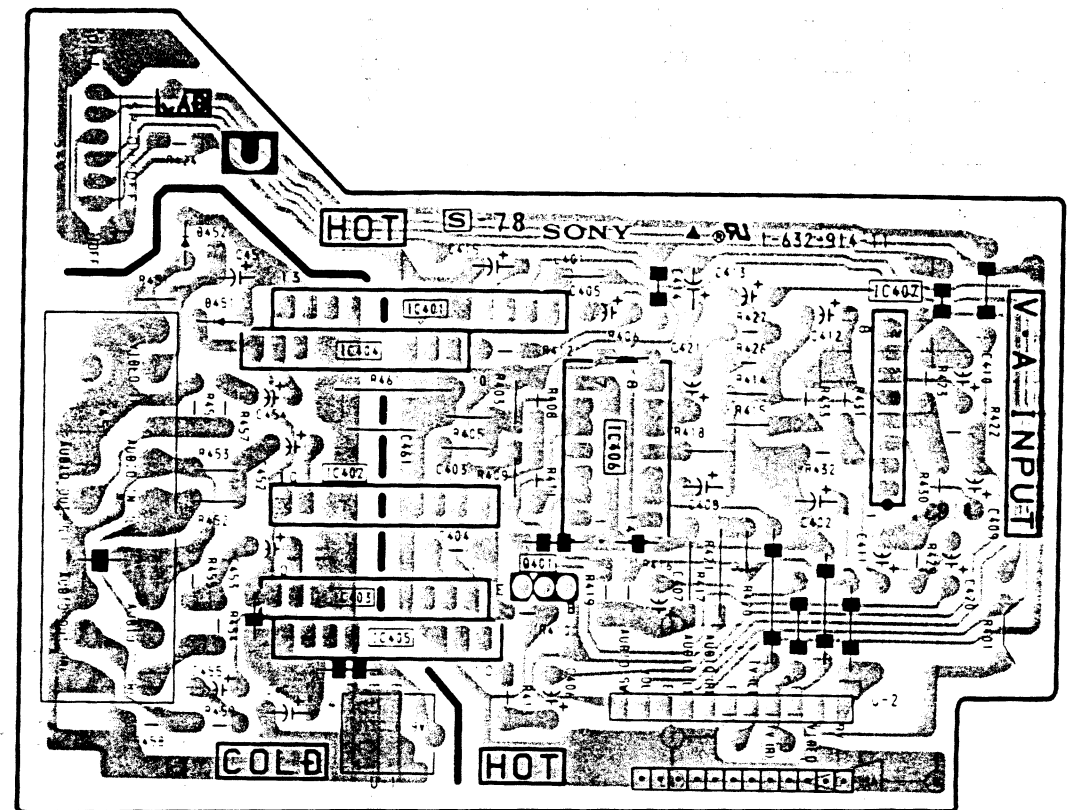
7 8 9 10 11 12 13 14 15 16

U (VIDEO INPUT, AUDIO VARIABLE OUT, AUDIO SW, SPEAKER SW)

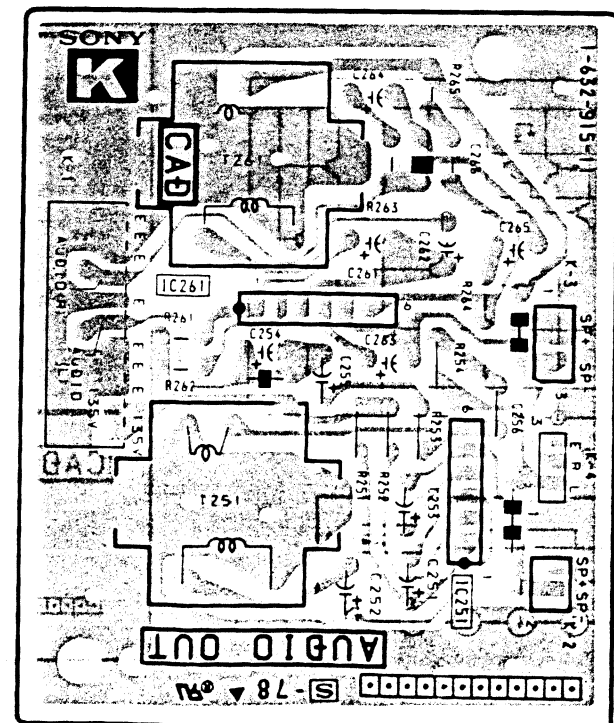
K (AUDIO OUT)



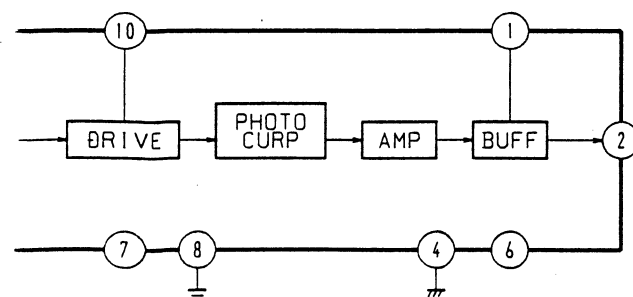
— U Board —



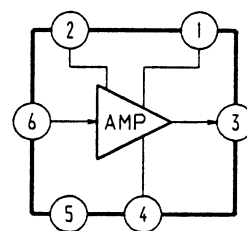
— K Board —



102 IAM-1



IC251 SI-4102



SECTION 7 EXPLODED VIEW

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

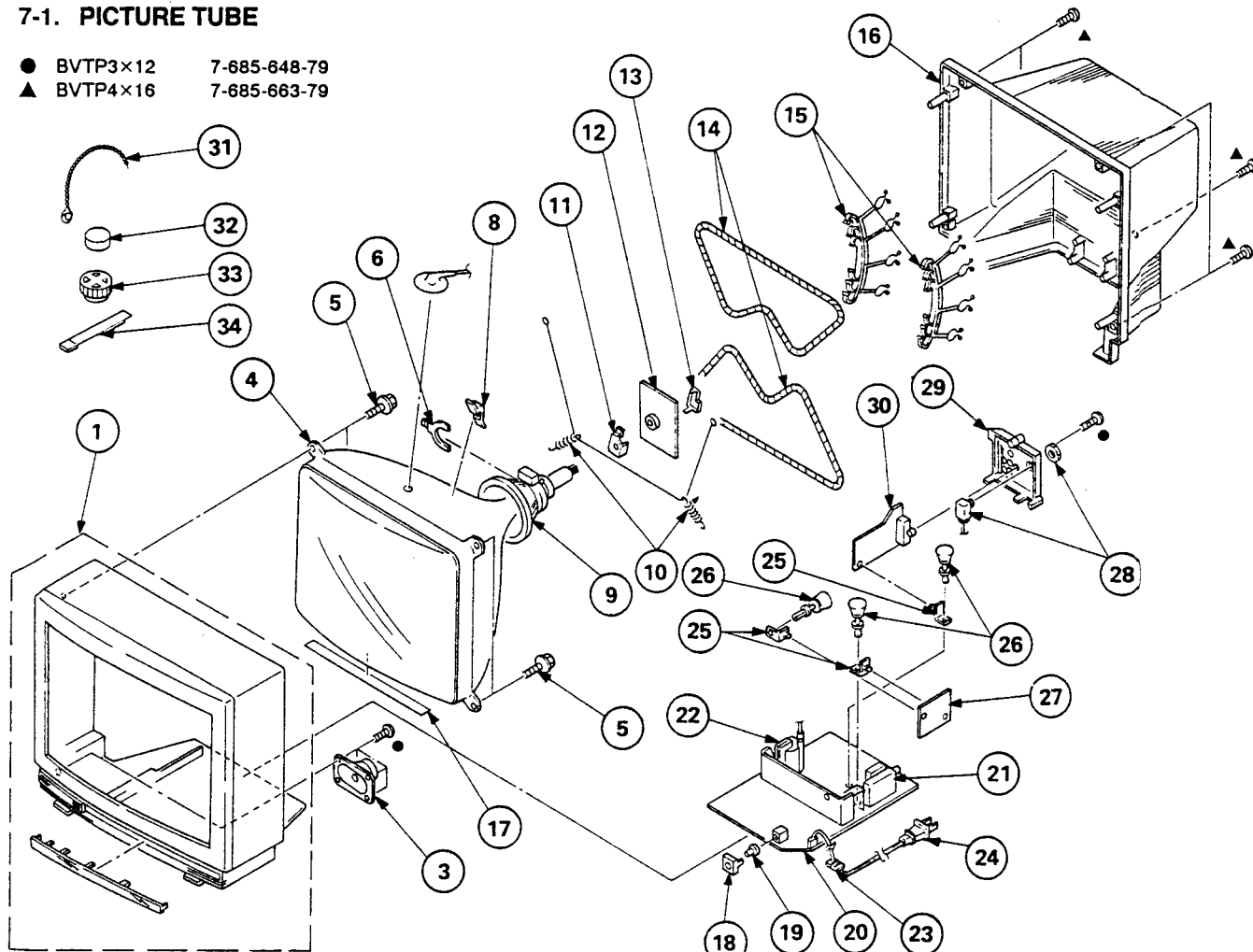
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. PICTURE TUBE

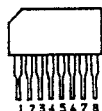
- BVTP3×12 7-685-648-79
- ▲ BVTP4×16 7-685-663-79



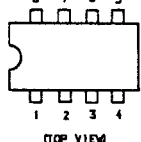
REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4380-070-1	CABINET ASSY (WITH BEZEL ASSY)		21	Δ 1-465-371-11	TUNER, ET (BTP-RA401)	
	X-4380-070-2	CABINET ASSY (WITH BEZEL ASSY)	(KV-19TR20 ONLY)		Δ 1-465-371-21	TUNER, ET (BTP-RA401)	(KV-19TR10 (USA), KV-19TR20 (USA) ONLY)
3	1-544-283-11	SPEAKER					(KV-19TR10 (CND), KV-19TR20 (CND) ONLY)
4	Δ 8-737-353-05	PICTURE TUBE (A49JLV50X)		22	Δ 1-439-483-11	TRANSFORMER ASSY, FLYBACK (NX-710)	
5	4-307-249-00	SCREW (5), TAPPING		23	Δ 4-388-328-01	GROMMET, AC CORD	
6	1-452-277-00	MAGNET, BMC		24	Δ 1-559-396-11	CORD, POWER	
8	3-703-961-01	SPACER, DY		25	*4-397-417-01	HOLDER, PC BOARD	
9	Δ 1-451-260-22	DEFLECTION YOKE (Y20NDA)		26	*4-397-418-01	RIVET, T TYPE	
10	*4-375-394-01	SPRING, TENSION		27	*1-632-915-11	K BOARD	
11	*4-374-717-01	COVER (MAIN), CV VOL		28	Δ 1-536-678-31	ANTENNA BLOCK	
12	*A-1331-048-A	C BOARD, COMPLETE			Δ 1-537-077-21	ANTENNA BLOCK	(KV-19TR10 (USA), KV-19TR20 (USA) ONLY)
13	*4-374-704-01	COVER (REAR LID), CV VOL					(KV-19TR10 (CND), KV-19TR20 (CND) ONLY)
14	Δ 1-426-358-11	COIL, DEMAGNETIZATION		29	4-397-423-11	TERMINAL BOARD, ANTENNA (KV-19TR20 ONLY)	
15	*4-341-778-01	BAND, DEGAUSSING COIL			4-397-423-21	TERMINAL BOARD, ANTENNA (KV-19TR10 ONLY)	
16	4-397-422-01	COVER, REAR			*A-1373-214-A	U BOARD, COMPLETE (KV-19TR20 ONLY)	
17	4-370-595-01	SHEET, BLOTING		31	4-308-870-00	CLIP, LEAD WIRE	
18	*4-381-686-01	BRACKET (B), LIGHT GUIDE		32	1-452-032-00	MAGNET, DISK; 10MM ϕ	
19	*4-389-517-01	GUIDE (R), LIGHT		33	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ϕ	
20	*A-1296-672-A	A BOARD, COMPLETE (KV-19TR20 (USA) ONLY)		34	X-4308-815-0	PERMALLOY ASSY, CONVERGENCE	
	*A-1296-725-A	A BOARD, COMPLETE (KV-19TR10 (USA) ONLY)					
	*A-1296-727-A	A BOARD, COMPLETE (KV-19TR20 (CND) ONLY)					
	*A-1296-730-A	A BOARD, COMPLETE (KV-19TR10 (CND) ONLY)					

6-3. SEMICONDUCTORS

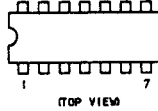
MB3110APS-G-SNY
CX20061



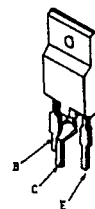
RC45558P



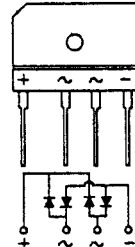
MC14066BPC



2S01555-2B-SI



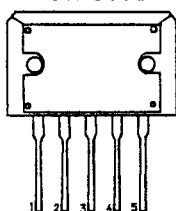
RBV-406H-01



M343002M8-511



STR3035



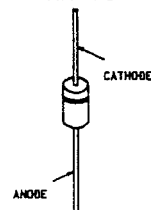
2SC2785-HFE
KSC2785
KSA1175



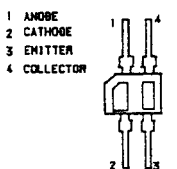
2SC2551R-0



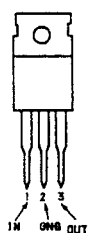
ERC06-1SS
RH-1A
RH-1C



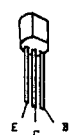
CAT59C11HP



MC7809CT



2S0789-03C
2S0788
2S0789-4



2SA1221-L



CXA1013AS



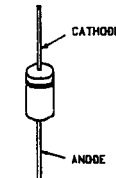
SI-4102



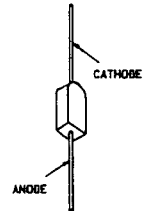
2S01585-K



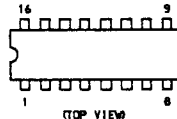
ES1F
EL1Z



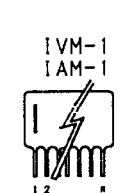
RM11C



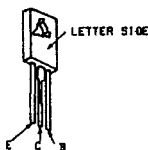
μP06325C



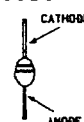
MARKING SIDE VIEW



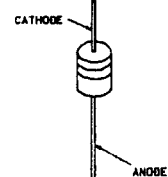
2SC2611
2SC2688-LK



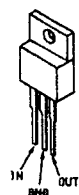
U05G



ERC38-06
RGP15J
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ISS199
R05.1ES-B3
R033ES-B2
R04.3ES-B1
R05.6ES-B2
R010ES-B2



MC7812CT

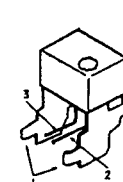


IVM-1
IAM-1



MARKING SIDE VIEW

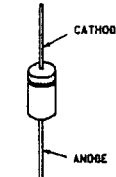
KeyC00SV



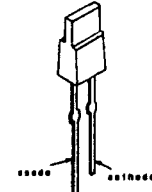
0TC144ES



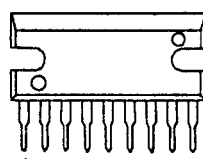
10ES2
ER028-08S



LEDU-12



μPC1378H-P



SECTION 8

ELECTRICAL PARTS LIST

A

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

• All resistors are in ohms
• F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

• MF : μ F, PF : μ F

COILS

• MMH : mH, UH : μ H

• The components identified by **A** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
*A-1296-672-A	A BOARD, COMPLETE (KV-19TR20 (USA) ONLY)			C139	1-124-477-11	ELECT 47MF 20%	16V
*A-1296-725-A	A BOARD, COMPLETE (KV-19TR10 (USA) ONLY)			C140	1-102-121-00	CERAMIC 0.0022MF 10%	50V
*A-1296-727-A	A BOARD, COMPLETE (KV-19TR20 (CND) ONLY)			C142	1-101-005-00	CERAMIC 0.022MF	50V
*A-1296-730-A	A BOARD, COMPLETE (KV-19TR10 (CND) ONLY)			C143	1-106-379-12	MYLAR 0.033MF 10%	100V
				C144	1-106-375-12	MYLAR 0.022MF 10%	100V
				C201	1-126-101-11	ELECT 100MF 20%	16V
*1-506-348-99	PIN, CONNECTOR 3P			C205	1-123-875-11	ELECT 10MF 20%	50V
*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P			C206	1-102-125-00	CERAMIC 0.0047MF 10%	50V
*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P			C214	1-126-320-11	ELECT 10MF 20%	16V
*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P						(KV-19TR10 ONLY)
*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P			C301	1-124-902-00	ELECT 0.47MF 20%	50V
*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P			C302	1-102-961-00	CERAMIC 27PF 5%	50V
1-533-223-11	CLIP, FUSE			C303	1-126-101-11	ELECT 100MF 20%	16V
*1-559-991-21	CONNECTOR ASSY 1P			C305	1-124-902-00	ELECT 0.47MF 20%	50V
*1-564-509-11	PLUG, CONNECTOR 6P			C309	1-124-791-11	ELECT 1MF 20%	50V
*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P			C312	1-102-951-00	CERAMIC 15PF 5%	50V
	(KV-19TR20 ONLY)			C314	1-102-973-00	CERAMIC 100PF 5%	50V
*1-565-502-11	CONNECTOR, BOARD TO BOARD 11P			C315	1-126-320-11	ELECT 10MF 20%	16V
*1-568-536-11	PLUG (MINIATURE DY) 6P			C316	1-126-529-11	ELECT 0.47MF 20%	50V
*4-341-751-01	EYELET (EY10, EY11, EY12, EY13, EY14, EY15, EY16, EY17, EY18, EY19)			C317	1-124-282-00	ELECT 22MF 20%	16V
				C318	1-102-074-00	CERAMIC 0.001MF 10%	50V
*4-341-752-01	EYELET (EY1, EY2, EY3, EY4, EY5, EY6, EY7, EY8)			C321	1-102-129-00	CERAMIC 0.01MF 10%	50V
*4-376-533-01	CASE (MAIN), SHIELD			C322	1-123-875-11	ELECT 10MF 20%	50V
				C330	1-124-120-11	ELECT 220MF 20%	16V
				C331	1-126-101-11	ELECT 100MF 20%	16V
				C340	1-123-932-00	ELECT 4.7MF 20%	100V
<CAPACITOR>				C351	1-124-477-11	ELECT 47MF 20%	16V
C047	1-126-320-11	ELECT 10MF 20%	16V				(KV-19TR20 ONLY)
C101	1-102-110-00	CERAMIC 220PF 10%	50V	C352	1-124-477-11	ELECT 47MF 20%	16V
C102	1-126-233-11	ELECT 22MF 20%	50V				(KV-19TR20 ONLY)
C103	1-124-556-11	ELECT 2200MF 20%	16V	C353	1-123-875-11	ELECT 10MF 20%	50V
C104	1-126-101-11	ELECT 100MF 20%	16V	C354	1-124-791-11	ELECT 1MF 20%	50V
C106	1-119-160-00	ELECT 470MF 10V		C355	1-124-791-11	ELECT 1MF 20%	50V
C107	1-101-361-00	CERAMIC 150PF 5%	50V	C356	1-126-233-11	ELECT 22MF 20%	50V
C108	1-101-361-00	CERAMIC 150PF 5%	50V	C357	1-124-791-11	ELECT 1MF 20%	50V
C109	1-124-927-11	ELECT 4.7MF 20%	50V	C358	1-124-791-11	ELECT 1MF 20%	50V
C110	1-124-927-11	ELECT 4.7MF 20%	50V	C364	1-124-480-11	ELECT 470MF 20%	25V
C114	1-123-875-11	ELECT 10MF 20%	50V	C366	1-123-875-11	ELECT 10MF 20%	50V
C116	1-136-165-00	FILM 0.1MF 5%	50V	C367	1-124-477-11	ELECT 47MF 20%	16V
C118	1-106-367-00	MYLAR 0.01MF 10%	100V	C398	1-102-110-00	CERAMIC 220PF 10%	50V
C120	1-106-383-00	MYLAR 0.047MF 200V		C501	1-126-101-11	ELECT 100MF 20%	16V
C121	1-124-477-11	ELECT 47MF 20%	16V	C502	1-106-363-00	MYLAR 0.0068MF 10%	100V
C122	1-124-963-11	ELECT 33MF 20%	16V	C503	1-124-791-11	ELECT 1MF 20%	50V
C126	1-124-902-00	ELECT 0.47MF 20%	50V	C505	1-106-363-00	MYLAR 0.0068MF 10%	100V
C127	1-102-963-00	CERAMIC 33PF 5%	50V	C507	1-102-110-00	CERAMIC 220PF 10%	50V
C128	1-102-965-00	CERAMIC 39PF 5%	50V	C508	1-101-006-00	CERAMIC 0.047MF 50V	
C132	1-102-965-00	CERAMIC 39PF 5%	50V	C509	1-101-006-00	CERAMIC 0.047MF 50V	
C133	1-102-973-00	CERAMIC 100PF 5%	50V	C510	1-106-363-00	MYLAR 0.0068MF 10%	100V
C135	1-102-121-00	CERAMIC 0.0022MF 10%	50V	C511	1-106-379-12	MYLAR 0.033MF 10%	100V
C136	1-124-499-11	ELECT 1MF 20%	50V	C512	1-124-925-11	ELECT 2.2MF 20%	50V
C137	1-124-499-11	ELECT 1MF 20%	50V	C513	1-124-791-11	ELECT 1MF 20%	50V

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Les composants identifiés par
une trame et une marque **Δ**
sont critiques pour la sécurité.
Ne les remplacer que par une
pièce portant le numéro spécifié.

The components identified by
shading and mark **Δ** are critical
for safety.
Replace only with part number
specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C514	1-123-875-11	ELECT	10MF 20% 50V	C617	1-124-046-00	ELECT	10MF 20% 160V
C515	1-124-464-11	ELECT	0.22MF 20% 50V			<FILTER>	
C516	1-124-477-11	ELECT	47MF 20% 16V				
C517	Δ 1-106-369-91	MYLAR	0.012MF 5% 200V	CF301	1-409-344-00	CERAMIC TRAP	3.58MHZ
C518	1-102-125-00	CERAMIC	0.0047MF 10% 50V			<COMPOSITION CIRCUIT BLOCK>	
C520	1-106-385-00	MYLAR	0.056MF 10% 100V	CP008	1-233-147-11	COMPOSITION CIRCUIT BLOCK	
C521	1-124-791-11	ELECT	1MF 20% 50V	CP009	1-233-145-11	COMPOSITION CIRCUIT BLOCK	
C522	1-102-824-00	CERAMIC	470PF 5% 50V	CP102	1-233-145-11	COMPOSITION CIRCUIT BLOCK	
C523	1-124-927-11	ELECT	4.7MF 20% 50V	CP104	1-233-147-11	COMPOSITION CIRCUIT BLOCK	
C530	1-124-277-11	ELECT	4.7MF 20% 25V	CP106	1-236-357-11	NETWORK, RES	
C534	1-124-122-11	ELECT	100MF 20% 35V	CP107	1-233-146-11	COMPOSITION CIRCUIT BLOCK	
C535	1-102-030-00	CERAMIC	330PF 10% 500V	CP108	1-233-118-11	COMPOSITION CIRCUIT BLOCK	
C537	1-106-363-00	MYLAR	0.0068MF 10% 100V	CP109	1-233-117-11	COMPOSITION CIRCUIT BLOCK	
C538	1-106-375-12	MYLAR	0.022MF 10% 100V	CP112	1-236-490-11	NETWORK, RES, THICK FILM	
C539	1-124-927-11	ELECT	4.7MF 20% 50V	CP117	1-236-078-11	NETWORK, RES, THICK FILM	
C540	1-124-925-11	ELECT	2.2MF 20% 50V	CP118	1-236-357-11	NETWORK, RES	
C541	1-124-910-11	ELECT	47MF 20% 50V	CP351	1-236-491-11	NETWORK, RES, THICK FILM	
C542	1-123-587-00	ELECT	560MF 10% 25V			<DIODE>	
C543	1-123-875-11	ELECT	10MF 20% 50V	D001	8-719-911-19	DIODE 1SS119	
C546	1-106-343-00	MYLAR	0.001MF 10% 100V	D081	8-719-911-19	DIODE 1SS119	
C548	Δ 1-102-212-91	CERAMIC	820PF 10% 500V	D082	8-719-109-86	DIODE RD5.1ES-B3	
C549	1-124-479-11	ELECT	330MF 20% 25V	D101	8-719-110-78	DIODE RD33ES-B2	
C550	1-124-902-00	ELECT	0.47MF 20% 50V	D104	1-808-919-11	LED UNIT (LEDU-9)	
C551	1-102-114-00	CERAMIC	470PF 10% 50V	D113	8-719-911-19	DIODE 1SS119	
C552	Δ 1-162-135-91	CERAMIC	560PF 10% 2KV	D114	8-719-911-19	DIODE 1SS119	
C553	1-102-030-00	CERAMIC	330PF 10% 500V	D115	8-719-109-74	DIODE RD4.3ES-B1	
C554	Δ 1-162-116-91	CERAMIC	680PF 10% 2KV	D117	8-719-109-89	DIODE RD5.6ES-B2	
C555	Δ 1-108-375-91	MYLAR	0.0058MF 10% 100V	D118	8-719-911-19	DIODE 1SS119	
C556	1-126-101-11	ELECT	100MF 20% 16V	D119	8-719-911-19	DIODE 1SS119	
C557	1-123-024-21	ELECT	33MF 160V	D120	8-719-911-19	DIODE 1SS119	
C558	1-124-046-00	ELECT	10MF 20% 160V	D121	8-719-911-19	DIODE 1SS119	
C559	1-106-391-12	MYLAR	0.1MF 10% 200V	D122	8-719-911-19	DIODE 1SS119	
C560	Δ 1-136-109-11	FILM	0.68MF 5% 200V	D123	8-719-911-19	DIODE 1SS119	
C561	1-124-634-11	ELECT	1MF 20% 250V	D128	8-719-911-19	DIODE 1SS119	
C562	Δ 1-102-228-91	CERAMIC	470PF 10% 500V	D151	8-719-911-19	DIODE 1SS119 (KV-19TR10 ONLY)	
C563	Δ 1-136-966-11	FILM	0.00000000PF 3% 2KV	D321	8-719-302-43	DIODE EL1Z	
C564	Δ 1-136-111-11	FILM	1MF 5% 200V	D350	8-719-911-19	DIODE 1SS119	
C565	Δ 1-136-312-51	FILM	0.043MF 5% 400V	D351	8-719-911-19	DIODE 1SS119	
C566	1-124-045-00	ELECT	4.7MF 20% 50V	D501	8-719-109-89	DIODE RD5.6ES-B2	
C567	Δ 1-162-318-91	CERAMIC	0.001MF 10% 500V	D508	8-719-911-55	DIODE U05G	
C568	1-106-383-00	MYLAR	0.047MF 10% 100V	D511	Δ 8-719-901-93	DIODE V19E	
C569	1-106-375-12	MYLAR	0.022MF 200V	D512	Δ 8-719-911-19	DIODE 1SS119	
C570	1-162-114-00	CERAMIC	0.0047MF 2KV	D513	8-719-945-80	DIODE ERC06-15S	
C571	1-106-361-00	MYLAR	0.0056MF 200V	D514	8-719-928-08	DIODE ERD28-08S	
C572	1-123-875-11	ELECT	10MF 20% 50V	D515	8-719-911-55	DIODE U05G	
C580	Δ 1-162-116-91	CERAMIC	680PF 10% 2KV	D516	8-719-911-55	DIODE U05G	
C594	1-124-557-11	ELECT	1000MF 20% 25V	D517	Δ 8-719-303-21	DIODE RH-1AV1	
C595	1-102-212-00	CERAMIC	820PF 10% 500V	D518	Δ 8-719-300-65	DIODE ES1F	
C596	1-136-557-11	FILM	0.0033MF 10% 630V	D519	8-719-976-64	DIODE RGP02-17	
C597	1-124-484-11	ELECT	220MF 20% 35V	D597	8-719-901-58	DIODE RGP15J	
C598	1-124-963-11	ELECT	33MF 20% 16V	D598	8-719-300-70	DIODE RH-1C (KV-19TR20 ONLY)	
C599	1-124-120-11	ELECT	220MF 20% 16V	D599	8-719-110-17	DIODE RD10ES-B2 (KV-19TR20 ONLY)	
C601	Δ 1-108-745-52	MYLAR	0.22MF 20% 125V	D601	Δ 8-719-305-07	DIODE RBV-406H	
C602	Δ 1-125-594-11	ELECT	560MF 20% 200V	D602	Δ 8-719-200-02	DIODE 10E2	
C603	1-161-830-00	CERAMIC	0.0047MF 500V	D603	8-719-304-63	DIODE	
C604	1-161-830-00	CERAMIC	0.0047MF 500V	D604	8-719-304-63	DIODE	
C605	1-123-948-00	ELECT	22MF 20% 250V	D605	8-719-109-93	DIODE RD6.2ES-B3	
C606	1-126-176-11	ELECT	220MF 20% 10V	D606	8-719-911-55	DIODE U05G	
C615	1-124-046-00	ELECT	10MF 20% 160V				
C616	1-124-046-00	ELECT	10MF 20% 160V				

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• The components identified by **☒** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifiés par une trame et une marque **☒** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

The components identified by shading and mark **☒** are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R029	1-249-414-11	CARBON	560 5% 1/4W	R206	1-249-417-11	CARBON	1K 5% 1/4W
R030	1-249-414-11	CARBON	560 5% 1/4W	R207	1-249-435-11	CARBON	33K 5% 1/4W
R031	1-249-414-11	CARBON	560 5% 1/4W	R208	1-249-425-11	CARBON	4.7K 5% 1/4W
R034	1-249-426-11	CARBON	5.6K 5% 1/4W	R209	1-249-417-11	CARBON	1K 5% 1/4W
R035	1-249-417-11	CARBON	1K 5% 1/4W	R217	1-249-417-11	CARBON	1K 5% 1/4W
R036	1-249-416-11	CARBON	820 5% 1/4W	R222	1-249-417-11	CARBON	1K 5% 1/4W
R037	1-249-416-11	CARBON	820 5% 1/4W	R224	1-249-417-11	CARBON	1K 5% 1/4W
R038	1-249-414-11	CARBON	560 5% 1/4W	R240	1-249-437-11	CARBON	47K 5% 1/4W
R040	1-249-431-11	CARBON	15K 5% 1/4W	R241	1-249-441-11	CARBON	100K 5% 1/4W
R044	1-249-414-11	CARBON	560 5% 1/4W	R301	1-215-472-00	METAL	130K 1% 1/6W
R046	1-249-433-11	CARBON	22K 5% 1/4W	R302	1-249-438-11	CARBON	56K 5% 1/4W
R047	1-249-439-11	CARBON	68K 5% 1/4W	R304	1-247-889-00	CARBON	270K 5% 1/4W
R089	1-249-405-11	CARBON	100 5% 1/4W	R305	1-249-440-11	CARBON	82K 5% 1/4W
R090	1-249-405-11	CARBON	100 5% 1/4W	R306	1-249-437-11	CARBON	47K 5% 1/4W
R102	1-249-417-11	CARBON	1K 5% 1/4W	R307	1-249-429-11	CARBON	10K 5% 1/4W
R103	1-215-923-00	METAL OXIDE	10K 5% 3W F	R308	1-249-411-11	CARBON	330 5% 1/4W
R108	1-249-425-11	CARBON	4.7K 5% 1/4W	R309	1-249-411-11	CARBON	330 5% 1/4W
R113	1-249-417-11	CARBON	1K 5% 1/4W	R310	1-249-411-11	CARBON	330 5% 1/4W
R115	1-249-417-11	CARBON	1K 5% 1/4W	R312	1-249-405-11	CARBON	100 5% 1/4W
R116	1-249-421-11	CARBON	2.2K 5% 1/4W	R313	1-249-427-11	CARBON	6.8K 5% 1/4W
R117	1-249-421-11	CARBON	2.2K 5% 1/4W	R314	1-249-407-11	CARBON	150 5% 1/4W
R118	1-249-433-11	CARBON	22K 5% 1/4W	R315	1-249-417-11	CARBON	1K 5% 1/4W
R120	1-249-437-11	CARBON	47K 5% 1/4W	R316	1-249-411-11	CARBON	330 5% 1/4W
R121	1-249-434-11	CARBON	27K 5% 1/4W	R317	1-249-419-11	CARBON	1.5K 5% 1/4W
R123	1-249-417-11	CARBON	1K 5% 1/4W	R318	1-249-417-11	CARBON	1K 5% 1/4W
R124	1-249-417-11	CARBON	1K 5% 1/4W	R319	1-249-417-11	CARBON	1K 5% 1/4W
R125	1-249-417-11	CARBON	1K 5% 1/4W	R320	1-249-417-11	CARBON	1K 5% 1/4W
R126	1-249-429-11	CARBON	10K 5% 1/4W	R321	1-249-433-11	CARBON	22K 5% 1/4W
R127	1-249-413-11	CARBON	470 5% 1/4W	☒ R322 ☒		CARBON	1/4W
R129	1-249-413-11	CARBON	470 5% 1/4W	R323	1-249-427-11	CARBON	6.8K 5% 1/4W
R130	1-249-423-11	CARBON	3.3K 5% 1/4W	☒ R324 ☒		CARBON	1/4W
R132	1-249-429-11	CARBON	10K 5% 1/4W	R325	1-249-389-11	CARBON	4.7 5% 1/4W F
R136	1-249-405-11	CARBON	100 5% 1/4W	R328	1-249-419-11	CARBON	1.5K 5% 1/4W
R138	1-249-411-11	CARBON	330 5% 1/4W	R329	1-249-441-11	CARBON	100K 5% 1/4W
R139	1-249-433-11	CARBON	22K 5% 1/4W	R330	1-249-426-11	CARBON	5.6K 5% 1/4W
R142	1-249-429-11	CARBON	10K 5% 1/4W	R331	1-249-417-11	CARBON	1K 5% 1/4W
R143	1-249-429-11	CARBON	10K 5% 1/4W	R333	1-249-429-11	CARBON	10K 5% 1/4W
R146	1-249-417-11	CARBON	1K 5% 1/4W	R334	1-249-413-11	CARBON	470 5% 1/4W
R147	1-249-428-11	CARBON	3.2K 5% 1/4W	R335	1-249-425-11	CARBON	4.7K 5% 1/4W
R148	1-249-432-11	CARBON	18K 5% 1/4W	R336	1-247-895-00	CARBON	470K 5% 1/4W
R149	1-249-423-11	CARBON	3.3K 5% 1/4W	R337	1-249-417-11	CARBON	1K 5% 1/4W
R150	1-249-437-11	CARBON	47K 5% 1/4W	R338	1-247-903-00	CARBON	1M 5% 1/4W
R151	1-249-429-11	CARBON	10K 5% 1/4W	R341	1-249-417-11	CARBON	1K 5% 1/4W
R152	1-249-440-11	CARBON	82K 5% 1/4W	R342	1-249-421-11	CARBON	2.2K 5% 1/4W
R153	1-247-903-00	CARBON	1M 5% 1/4W	R350	1-249-437-11	CARBON	47K 5% 1/4W
R154	1-247-895-00	CARBON	470K 5% 1/4W	R352	1-247-901-11	CARBON	820K 5% 1/4W
R155	1-249-439-11	CARBON	68K 5% 1/4W	R353	1-249-429-11	CARBON	10K 5% 1/4W
R156	1-249-424-11	CARBON	3.9K 5% 1/4W	R354	1-249-405-11	CARBON	100 5% 1/4W (KV-19TR20 ONLY)
R157	1-249-409-11	CARBON	220 5% 1/4W	R355	1-249-433-11	CARBON	22K 5% 1/4W (KV-19TR20 ONLY)
R158	1-247-895-00	CARBON	470K 5% 1/4W	R356	1-249-405-11	CARBON	100 5% 1/4W (KV-19TR20 ONLY)
R159	1-249-409-11	CARBON	220 5% 1/4W	R357	1-249-405-11	CARBON	100 5% 1/4W (KV-19TR20 ONLY)
R160	1-249-439-11	CARBON	68K 5% 1/4W	R358	1-249-405-11	CARBON	100 5% 1/4W (KV-19TR20 ONLY)
R161	1-249-424-11	CARBON	3.9K 5% 1/4W	R360	1-249-426-11	CARBON	5.6K 5% 1/4W
R170	1-249-415-11	CARBON	680 5% 1/4W	R361	1-249-429-11	CARBON	10K 5% 1/4W
R172	1-249-429-11	CARBON	10K 5% 1/4W	R362	1-215-907-11	METAL OXIDE	22 5% 3W F
R174	1-249-437-11	CARBON	47K 5% 1/4W	R363	1-249-422-11	CARBON	2.7K 5% 1/4W
R175	1-249-441-11	CARBON	100K 5% 1/4W	R364	1-249-420-11	CARBON	1.8K 5% 1/4W
R176	1-249-441-11	CARBON	100K 5% 1/4W	R366	1-249-430-11	CARBON	12K 5% 1/4W
R180	1-249-426-11	CARBON	5.6K 5% 1/4W	R367	1-249-436-11	CARBON	39K 5% 1/4W
R182	1-249-415-11	CARBON	680 5% 1/4W	R371	1-249-429-11	CARBON	10K 5% 1/4W
R185	1-249-429-11	CARBON	10K 5% 1/4W				
R203	1-247-885-00	CARBON	180K 5% 1/4W				
R204	1-249-434-11	CARBON	27K 5% 1/4W				
R205	1-249-417-11	CARBON	1K 5% 1/4W				

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

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Ne les remplacer que par une pièce portant le numéro spécifié.

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<FUSE>				Q107	8-729-922-69	TRANSISTOR KSC2785	
F601 Δ	1-532-748-11	FUSE, GLASS TUBE 6.3A/125V		Q109	8-729-922-68	TRANSISTOR KSA1175	
F602 Δ	1-532-741-11	FUSE, GLASS TUBE 1.25A/125V		Q110	8-729-922-69	TRANSISTOR KSC2785	
<IC>				Q112	8-729-320-62	TRANSISTOR 2SD789-34	
IC101	8-759-634-46	IC M34302M8-511		Q113	8-729-922-68	TRANSISTOR KSA1175	
IC102	8-759-748-69	IC CAT59C11HP		Q114	8-729-922-69	TRANSISTOR KSC2785	
IC103	8-749-920-65	IC KEY-COOSV		Q115	8-729-922-69	TRANSISTOR KSC2785	
IC301	8-752-031-72	IC CXA1013AS		Q116	8-729-922-69	TRANSISTOR KSC2785	
IC302 Δ	8-752-006-12	IC CX20061 (KV-19TR20 ONLY)		Q119	8-729-922-69	TRANSISTOR KSC2785	
IC303	8-759-104-05	IC UPD6325C		Q120	8-729-922-69	TRANSISTOR KSC2785	
IC304	8-759-982-10	IC RC7809FA		Q121	8-729-922-69	TRANSISTOR KSC2785	
IC305	8-759-013-09	IC MC7812CT		Q122	8-729-922-69	TRANSISTOR KSC2785	
IC501	8-759-105-82	IC UPC137BH P		Q123	8-729-922-68	TRANSISTOR KSA1175	
IC502	8-759-945-58	IC RC4558P		Q201	8-729-922-69	TRANSISTOR KSC2785	
IC601 Δ	8-749-930-35	IC STR3035		Q205	8-729-922-69	TRANSISTOR KSC2785	
	*4-363-404-00	HOLDER, IC; IC601		Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE	
	4-369-267-01	SPACER, MICA; IC601		Q302	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<IF BLOCK>				Q303	8-729-922-69	TRANSISTOR KSC2785	
IF201	1-464-756-21	IF BLOCK (IF-450A)		Q304	8-729-922-69	TRANSISTOR KSC2785	
<COIL>				Q305	8-729-922-68	TRANSISTOR KSA1175	
L102	1-408-421-00	INDUCTOR 100UH		Q306	8-729-922-69	TRANSISTOR KSC2785	
L103	1-408-421-00	INDUCTOR 100UH		Q354	8-729-922-68	TRANSISTOR KSA1175	
L104	1-408-404-00	INDUCTOR 3.9UH		Q371	8-729-922-69	TRANSISTOR KSC2785	
L105	1-408-404-00	INDUCTOR 3.9UH		Q398	8-729-922-69	TRANSISTOR KSC2785	
L106	1-408-404-00	INDUCTOR 3.9UH		Q501	8-729-107-26	TRANSISTOR 2SD1585-K	
L108	1-410-472-41	INDUCTOR 15UH		Q502	8-729-922-68	TRANSISTOR KSA1175	
L109	1-410-472-41	INDUCTOR 15UH		Q503	8-729-922-69	TRANSISTOR KSC2785	
L203	1-408-408-00	INDUCTOR 8.2UH		Q504	8-729-922-68	TRANSISTOR KSA1175	
L301	1-410-472-41	INDUCTOR 15UH		Q505	8-729-922-69	TRANSISTOR KSC2785	
L302	1-410-473-11	INDUCTOR 18UH		Q506	8-729-922-68	TRANSISTOR KSA1175	
L501 Δ	1-410-666-41	INDUCTOR 18UH		Q507	8-729-922-69	TRANSISTOR KSC2785	
L502 Δ	1-408-938-11	INDUCTOR 22UH		Q550	8-729-119-80	TRANSISTOR 2SC2688-LK	
L503 Δ	1-410-669-41	INDUCTOR 33UH		Q551	8-729-821-87	TRANSISTOR 2SD1878-CA	
L505	1-459-104-00	COIL, WITH CORE		Q552	8-729-922-69	TRANSISTOR KSC2785	
L506	1-407-365-00	COIL, CHOKE		Q553	8-729-122-12	TRANSISTOR 2SA1221-L	
L507	1-408-349-00	COIL, CHOKE		Q599	8-729-320-62	TRANSISTOR 2SD789-34 (KV-19TR20 ONLY)	
L508	1-408-239-00	INDUCTOR 4.7MMH		Q601	8-729-255-12	TRANSISTOR 2SC2551-0	
L509 Δ	1-459-390-11	COIL (WITH CORE)		<RESISTOR>			
L510 Δ	1-459-316-12	COIL, FERRITE (HLC)		R001	1-249-421-11	CARBON 2.2K 5% 1/4W	
L511	1-459-075-00	COIL, DYNAMIC CONVERSION CHOKE		R002	1-249-414-11	CARBON 560 5% 1/4W	
L513	1-410-665-31	INDUCTOR 15UH		R003	1-249-414-11	CARBON 560 5% 1/4W	
L516 Δ	1-459-407-11	COIL, FERRITE CHOKE		R004	1-249-414-11	CARBON 560 5% 1/4W	
L601 Δ	1-408-225-11	INDUCTOR 3.3UH		R005	1-249-414-11	CARBON 560 5% 1/4W	
L602 Δ	1-408-225-11	INDUCTOR 3.3UH		R007	1-249-414-11	CARBON 560 5% 1/4W	
L609	1-410-459-11	INDUCTOR 1.2UH		R008	1-249-414-11	CARBON 560 5% 1/4W	
<NEON LAMP>				R009	1-249-414-11	CARBON 560 5% 1/4W	
NL501	1-519-108-99	LAMP, NEON		R010	1-249-417-11	CARBON 1K 5% 1/4W	
<MODULE>				R011	1-249-417-11	CARBON 1K 5% 1/4W	
PM501	1-808-979-11	MODULE PROTECTOR (PM-17)		R013	1-249-414-11	CARBON 560 5% 1/4W	
<TRANSISTOR>				R014	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R015	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R016	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R017	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R018	1-249-416-11	CARBON 820 5% 1/4W	
				R019	1-249-429-11	CARBON 10K 5% 1/4W	
				R020	1-249-429-11	CARBON 10K 5% 1/4W	
				R021	1-249-434-11	CARBON 27K 5% 1/4W	
				R022	1-249-414-11	CARBON 560 5% 1/4W	
				R023	1-249-414-11	CARBON 560 5% 1/4W	
				R026	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R027	1-249-421-11	CARBON 2.2K 5% 1/4W	
				R028	1-249-423-11	CARBON 3.3K 5% 1/4W	

KV-19TR10/19TR20

RM-780/RM-781

A C U

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<SPARK GAP>				R702	1-249-422-11	CARBON	2.7K 5% 1/4W
SG501	1-519-422-11	GAP, SPARK		R703	1-249-415-11	CARBON	680 5% 1/4W
<TRANSFORMER>				R704	1-249-418-11	CARBON	1.2K 5% 1/4W
T501 Δ	1-437-090-21	HDT		R705	1-249-411-11	CARBON	330 5% 1/4W
T504 Δ	1-439-483-11	TRANSFORMER ASSY, FLYBACK (NX-1710)		R706	1-249-422-11	CARBON	2.7K 5% 1/4W
T599 Δ	1-421-857-11	TRANSFORMER, FERRITE (KV-19TR20 ONLY)		R707	1-249-413-11	CARBON	470 5% 1/4W
T601 Δ	1-424-335-11	TRANSFORMER, LINE FILTER		R708	1-249-411-11	CARBON	330 5% 1/4W
<THERMISTOR>				R709	1-249-418-11	CARBON	1.2K 5% 1/4W
THP601 Δ	1-808-081-13	THERMISTOR, POSITIVE		R710	1-249-411-11	CARBON	330 5% 1/4W
<TUNER>				R711	1-249-422-11	CARBON	2.7K 5% 1/4W
TU101 Δ	1-465-371-11	TUNER, ET (BTP-RA401)		R712	1-249-410-11	CARBON	270 5% 1/4W
		(KV-19TR10 (USA), KV-19TR20 (USA) ONLY)		R713	1-249-422-11	CARBON	2.7K 5% 1/4W
Δ	1-465-371-21	TUNER, ET (BTP-RA401)		R714	1-249-409-11	CARBON	220 5% 1/4W
		(KV-19TR10 (CND), KV-19TR20 (CND) ONLY)		R715	1-202-824-00	SOLID	3.3K 10% 1/2W
<CRYSTAL>				R716	1-215-899-11	METAL OXIDE	15K 5% 2W F
X101	1-567-192-11	OSCILLATOR, CERAMIC		R717	1-202-824-00	SOLID	3.3K 10% 1/2W
X301	1-567-505-11	OSCILLATOR, CRYSTAL		R718	1-215-899-11	METAL OXIDE	15K 5% 2W F
*****				R719	1-202-824-00	SOLID	3.3K 10% 1/2W
*A-1331-048-A	C BOARD, COMPLETE			R720	1-215-899-11	METAL OXIDE	15K 5% 2W F
*****				R721	1-249-421-11	CARBON	2.2K 5% 1/4W
*1-506-371-00	PIN, CONNECTOR 2P			R722	1-202-837-00	SOLID	82K 10% 1/2W
*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P			R723	1-202-846-00	SOLID	470K 10% 1/2W
1-526-814-11	SOCKET, PICTURE TUBE			R724	1-202-848-00	SOLID	680K 10% 1/2W
*1-564-509-11	PLUG, CONNECTOR 6P			R725	1-202-838-00	SOLID	100K 10% 1/2W
*4-374-704-01	COVER (REAR LID), CV VOL			R726	1-202-719-00	SOLID	1M 10% 1/2W
*4-374-717-01	COVER (MAIN), CV VOL			R727	1-202-814-11	SOLID	33K 10% 1/2W
<CAPACITOR>				R728	1-216-372-11	METAL OXIDE	1.8 5% 2W F
C701	1-102-112-00	CERAMIC	330PF 10% 50V	R729	1-202-842-11	SOLID	220K 10% 1/2W
C702	1-102-112-00	CERAMIC	330PF 10% 50V	R730	1-202-549-00	SOLID	100 10% 1/2W
C703	1-102-112-00	CERAMIC	330PF 10% 50V	<VARIABLE RESISTOR>			
C704	1-123-875-11	ELECT	10MF 20% 50V	RV701	1-228-993-00	RES, ADJ, CARBON	4.7K
C705	1-101-006-00	CERAMIC	0.047MF 50V	RV702	1-228-991-00	RES, ADJ, CARBON	2.2K
C706	1-123-875-11	ELECT	10MF 20% 50V	RV703	1-228-993-00	RES, ADJ, CARBON	4.7K
C707	1-129-718-00	FILM	0.022MF 20% 630V	RV704	1-228-991-00	RES, ADJ, CARBON	2.2K
C708	1-162-116-00	CERAMIC	680PF 10% 2KV	RV705	1-228-993-00	RES, ADJ, CARBON	4.7K
C711	1-102-116-00	CERAMIC	680PF 10% 50V	RV706	1-228-995-00	RES, ADJ, CARBON	22K
C712	1-102-116-00	CERAMIC	680PF 10% 50V	RV707	1-230-641-11	RES, ADJ, METAL GLAZE	2.2M
C713	1-102-116-00	CERAMIC	680PF 10% 50V	RV708	1-230-641-11	RES, ADJ, METAL GLAZE	2.2M
<COIL>				RV709 Δ	1-230-619-11	RES, ADJ, METAL GLAZE	110M
L701	1-408-424-00	INDUCTOR	180UH	*****			
<TRANSISTOR>				*A-1373-214-A	U BOARD, COMPLETE (KV-19TR20 ONLY)		
Q701	8-729-326-11	TRANSISTOR 2SC2611		*****			
Q702	8-729-326-11	TRANSISTOR 2SC2611		*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P		
Q703	8-729-326-11	TRANSISTOR 2SC2611		*1-565-487-11	CONNECTOR, BOARD TO BOARD 11P		
<RESISTOR>				<CAPACITOR>			
R701	1-249-413-11	CARBON	470 5% 1/4W	C401	1-124-119-00	ELECT	330MF 20% 16V
				C402	1-124-119-00	ELECT	330MF 20% 16V
				C403	1-126-320-11	ELECT	10MF 20% 16V
				C408	1-123-875-11	ELECT	10MF 20% 50V
				C414	1-123-875-11	ELECT	10MF 20% 50V
				C415	1-124-477-11	ELECT	47MF 20% 16V
				C451	1-124-119-00	ELECT	330MF 20% 16V
				C452	1-124-791-11	ELECT	1MF 20% 50V
				C461	1-161-742-00	CERAMIC	0.0022MF 20% 400V
				<DIODE>			
				D451	8-719-911-19	DIODE 1SS119	
				D452	8-719-911-19	DIODE 1SS119	

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KV-19TR10/19TR20
RM-700/RM-701

A

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R397	1-249-434-11	CARBON	27K 5% 1/4W	R566	1-247-895-00	CARBON	470K 5% 1/4W
R398	1-249-423-11	CARBON	3.3K 5% 1/4W	R567	1-216-399-00	METAL OXIDE	6.8 5% 3W F
R501	1-216-458-11	METAL OXIDE	1.8K 5% 2W F	R568 Δ	1-216-390-51	METAL OXIDE	1.2 5% 3W F
R502	1-216-458-11	METAL OXIDE	1.8K 5% 2W F	R569	1-214-913-00	METAL	100K 1% 1/2W
R503	1-216-458-11	METAL OXIDE	1.8K 5% 2W F	R570	1-215-869-11	METAL OXIDE	1K 5% 1W F
R504	1-216-458-11	METAL OXIDE	1.8K 5% 2W F	R571	1-216-356-00	METAL OXIDE	3.9 5% 1W F
R505	1-214-780-00	METAL	130K 1% 1/4W	R572	1-249-423-11	CARBON	3.3K 5% 1/4W
R506	1-249-407-11	CARBON	150 5% 1/4W	R573	1-247-764-11	CARBON	10K 5% 1/2W F
R507	1-249-426-11	CARBON	5.6K 5% 1/4W	R574	1-216-349-00	METAL OXIDE	1 5% 1W F
R508	1-249-437-11	CARBON	47K 5% 1/4W	R577 Δ	1-216-451-91	METAL OXIDE	120 5% 2W F
R509	1-249-434-11	CARBON	27K 5% 1/4W	R579 Δ	1-249-415-91	CARBON	680 5% 1/4W F
R510	1-249-422-11	CARBON	2.7K 5% 1/4W	R580 Δ	1-216-428-91	METAL OXIDE	180 5% 1W F
R512	1-249-411-11	CARBON	330 5% 1/4W F	R581	1-249-413-11	CARBON	470 5% 1/4W F
R513	1-215-472-00	METAL	130K 1% 1/6W	R582	1-215-863-11	METAL OXIDE	100 5% 1W F
R514	1-215-457-00	METAL	33K 1% 1/6W	R583	1-215-863-11	METAL OXIDE	100 5% 1W F
R515	1-249-427-11	CARBON	6.8K 5% 1/4W	R586	1-247-746-11	CARBON	390 5% 1/2W
R516	1-249-428-11	CARBON	8.2K 5% 1/4W	R587 Δ	1-215-899-91	METAL OXIDE	15K 5% 2W F
R517	1-249-417-11	CARBON	1K 5% 1/4W	R589	1-249-441-11	CARBON	100K 5% 1/4W
R518 Δ	1-216-379-91	METAL OXIDE	6.8 5% 2W F	R598	1-249-389-11	CARBON	4.7 5% 1/4W F
R519	1-249-424-11	CARBON	3.9K 5% 1/4W	R599	1-249-419-11	CARBON	1.5K 5% 1/4W
R520	1-249-421-11	CARBON	2.2K 5% 1/4W	R601 Δ	1-202-719-91	SOLID	1M 10% 1/2W (KV-19TR20 ONLY)
R521	1-249-417-11	CARBON	1K 5% 1/4W	R602 Δ	1-205-792-11	WIREWOUND	1.8 5% 10W F
R522	1-249-431-11	CARBON	15K 5% 1/4W	R605 Δ	1-205-691-11	WIREWOUND	150 5% 20W F
R523	1-249-417-11	CARBON	1K 5% 1/4W	R610 Δ	1-217-224-11	WIREWOUND	100 10% 2W F
R524	1-249-429-11	CARBON	10K 5% 1/4W	R611	1-215-872-11	METAL OXIDE	3.3K 5% 1W F
R525	1-249-417-11	CARBON	1K 5% 1/4W	R612	1-205-744-11	WIREWOUND	4.7K 5% 20W
R526	1-249-423-11	CARBON	3.3K 5% 1/4W	R613	1-249-437-11	CARBON	47K 5% 1/4W
R527	1-259-871-15	CARBON	6.8M 5% 1/4W	R614	1-249-425-11	CARBON	4.7K 5% 1/4W
R528	1-249-419-11	CARBON	1.5K 5% 1/4W	R615 Δ	1-216-463-91	METAL OXIDE	12K 5% 2W F
R529	1-249-417-11	CARBON	1K 5% 1/4W	R616 Δ	1-247-719-91	CARBON	3.3K 5% 1/4W F
R530	1-249-433-11	CARBON	22K 5% 1/4W	R617	1-249-401-11	CARBON	47 5% 1/4W F
R531	1-249-410-11	CARBON	270 5% 1/4W	R618	1-247-895-00	CARBON	470K 5% 1/4W
R532	1-249-438-11	CARBON	56K 5% 1/4W	<VARIABLE RESISTOR>			
R533	1-247-887-00	CARBON	220K 5% 1/4W	RV131	1-238-012-11	RES. ADJ. CARBON 1K	
R534	1-249-417-11	CARBON	1K 5% 1/4W	RV201	1-238-016-11	RES. ADJ. CARBON 10K	
R535	1-249-431-11	CARBON	15K 5% 1/4W	RV306	1-238-012-11	RES. ADJ. CARBON 1K	
R536	1-249-426-11	CARBON	5.6K 5% 1/4W	RV307	1-238-011-11	RES. ADJ. CARBON 470	
R537	1-249-430-11	CARBON	12K 5% 1/4W	RV501	1-228-728-00	RES. ADJ. CERAMIC CARBON 100K	
R538	1-249-405-11	CARBON	100 5% 1/4W	RV501	1-228-728-00	RES. ADJ. CERAMIC CARBON 100K	
R539	1-215-373-31	METAL	10 1% 1/6W	RV502	1-238-020-11	RES. ADJ. CARBON 100K	
R540	1-249-408-11	CARBON	180 5% 1/4W	RV505	1-238-017-11	RES. ADJ. CARBON 22K	
R541	1-249-427-11	CARBON	6.8K 5% 1/4W	RV506	1-238-019-11	RES. ADJ. CARBON 47K	
R542	1-249-423-11	CARBON	3.3K 5% 1/4W	RV507	1-238-010-11	RES. ADJ. CARBON 330	
R543	1-249-439-11	CARBON	12K 5% 1/4W	<RELAY>			
R544	1-249-426-11	CARBON	5.6K 5% 1/4W	RY601 Δ	1-515-573-13	RELAY, POWER	
R545	1-249-417-11	CARBON	1K 5% 1/4W	<SWITCH>			
R547	1-249-429-11	CARBON	10K 5% 1/4W	S101 Δ	1-571-532-22	SWITCH, TACTIL (POWER)	
R548	1-249-496-11	CARBON	100K 5% 1/2W	S102	1-571-532-21	SWITCH, TACTIL	
R549	1-249-415-11	CARBON	680 5% 1/4W F	S103	1-571-532-21	SWITCH, TACTIL	
R550	1-249-429-11	CARBON	10K 5% 1/4W	S104	1-571-532-21	SWITCH, TACTIL	
R551	1-249-428-11	CARBON	8.2K 5% 1/4W	S105	1-571-532-21	SWITCH, TACTIL	
R552	1-249-414-11	CARBON	560 5% 1/4W	S106	1-571-532-21	SWITCH, TACTIL (KV-19TR20 ONLY)	
R554	1-249-427-11	CARBON	6.8K 5% 1/4W	S501	1-554-186-00	SWITCH, LEVER	
R555	1-249-413-11	CARBON	470 5% 1/4W				
R556	1-216-352-11	METAL OXIDE	1.8 5% 1W F				
R557	1-249-411-11	CARBON	330 5% 1/4W				
R558	1-249-410-11	CARBON	270 5% 1/4W				
R559	1-249-409-11	CARBON	220 5% 1/4W				
R560	1-249-423-11	CARBON	3.3K 5% 1/4W				
R561	1-249-496-11	CARBON	100K 5% 1/2W				
R562	1-249-429-11	CARBON	10K 5% 1/4W				
R563	1-249-436-11	CARBON	39K 5% 1/4W				
R564	1-215-417-00	METAL	680 1% 1/6W				
R565	1-249-419-11	CARBON	1.5K 5% 1/4W				

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KV-19TR10/19TR20
RM-780/RM-781

U K

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
<IC>				T251 Δ 1-427-479-11 TRANSFORMER (SOT)			
IC401	1-235-783-21	INSULATED MODULE, VIDEO(IYM-1)		*****			
IC402	1-235-784-12	INSULATED MODULE, AUDIO(IAM-1)		MISCELLANEOUS			
IC406	8-759-000-49	IC MC14066BCP		*****			
<JACK>				Δ 1-426-358-11	COIL, DEMAGNETIZATION		
J451	1-569-354-11	JACK BLOCK, PIN 2P		Δ 1-451-260-22	DEFLECTION YOKE (Y20NDA)		
<COIL>				1-452-032-00	MAGNET, DISK: 10MM ϕ		
L401	1-410-515-11	INDUCTOR 330H		1-452-094-00	MAGNET, ROTATABLE DISK: 15MM ϕ		
<TRANSISTOR>				1-452-277-00	MAGNET, BMC		
Q401	8-729-900-89	TRANSISTOR DTC144ES		Δ 1-536-678-31	ANTENNA BLOCK		
<RESISTOR>				(KV-19TR10 (USA), KV-19TR20 (USA) ONLY)			
R401	1-249-409-11	CARBON 220 5% 1/4W		Δ 1-537-077-21	ANTENNA BLOCK		
R403	1-249-438-11	CARBON 56K 5% 1/4W		(KV-19TR10 (CND), KV-19TR20 (CND) ONLY)			
R405	1-249-438-11	CARBON 56K 5% 1/4W		Δ 1-559-396-11	CORD, POWER		
R406	1-249-405-11	CARBON 100 5% 1/4W		SP902	1-544-283-11	SPEAKER	
R409	1-249-441-11	CARBON 100K 5% 1/4W		V901 Δ 8-737-353-05	PICTURE TUBE (A49JLV50X)		
R414	1-249-438-11	CARBON 56K 5% 1/4W		*****			
R415	1-249-438-11	CARBON 56K 5% 1/4W		ACCESSORIES AND PACKING MATERIALS			
R418	1-249-405-11	CARBON 100 5% 1/4W		*****			
R420	1-247-885-00	CARBON 180K 5% 1/4W		PART NO.	DESCRIPTION	REMARK	
R421	1-249-429-11	CARBON 10K 5% 1/4W		1-465-385-11	REMOTE COMMANDER (RM-781) (KV-19TR20 ONLY)		
R451	1-249-404-00	CARBON 82 5% 1/4W		1-465-386-11	REMOTE COMMANDER (RM-780) (KV-19TR10 ONLY)		
R452	1-247-885-00	CARBON 180K 5% 1/4W		1-501-372-21	ANTENNA, TELESCOPIC		
R453	1-249-437-11	CARBON 47K 5% 1/4W		(KV-19TR10 (USA), KV-19TR20 (USA) ONLY)			
R461	1-202-726-00	SOLID 3.9M 10% 1/2W		1-513-379-00	CONVERTER (EAC-25)		
*****				(KV-19TR10 (CND), KV-19TR20 (CND) ONLY)			
*1-632-915-11	K BOARD			1-562-443-11	CONNECTOR, ANTENNA		
	*****			(KV-19TR10 (USA), KV-19TR20 (USA) ONLY)			
*1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P			3-751-226-21	MANUAL, INSTRUCTION		
*1-564-505-11	PLUG, CONNECTOR 2P			3-751-226-31	MANUAL, INSTRUCTION		
*1-565-487-11	CONNECTOR, BOARD TO BOARD 11P			(KV-19TR10 (CND), KV-19TR20 (CND) ONLY)			
<CAPACITOR>				*4-380-340-01	BAG, PROTECTION		
C251	1-124-925-11	ELECT 2.2MF 20% 100V		*4-397-482-01	CUSHION (UPPER) (ASSY)		
C252	1-124-799-11	ELECT 2.2MF 20% 160V		*4-397-483-01	CUSHION (LOWER) (ASSY)		
C253	1-124-667-11	ELECT 10MF 20% 100V		*4-397-484-01	INDIVIDUAL CARTON		
C255	1-124-910-11	ELECT 47MF 20% 50V					
C256	1-106-375-12	MYLAR 0.022MF 10% 100V					
<IC>							
IC251	8-749-900-15	IC SI-4102					
<RESISTOR>							
R251	1-249-434-11	CARBON 27K 5% 1/4W					
R252	1-249-401-11	CARBON 47 5% 1/4W F					
R253	1-249-410-11	CARBON 270 5% 1/4W F					
R254	1-249-430-11	CARBON 12K 5% 1/4W					
<TRANSFORMER>							

KV-19TR10/19TR20

RM-780/RM-781

SONY SERVICE MANUAL

US Model

KV-19TR10

Chassis No. SCC-D37E-A

KV-19TR20

Chassis No. SCC-D37F-A

Canadian Model

KV-19TR10

Chassis No. SCC-D36C-A

KV-19TR20

Chassis No. SCC-D36B-A

CORRECTION-1

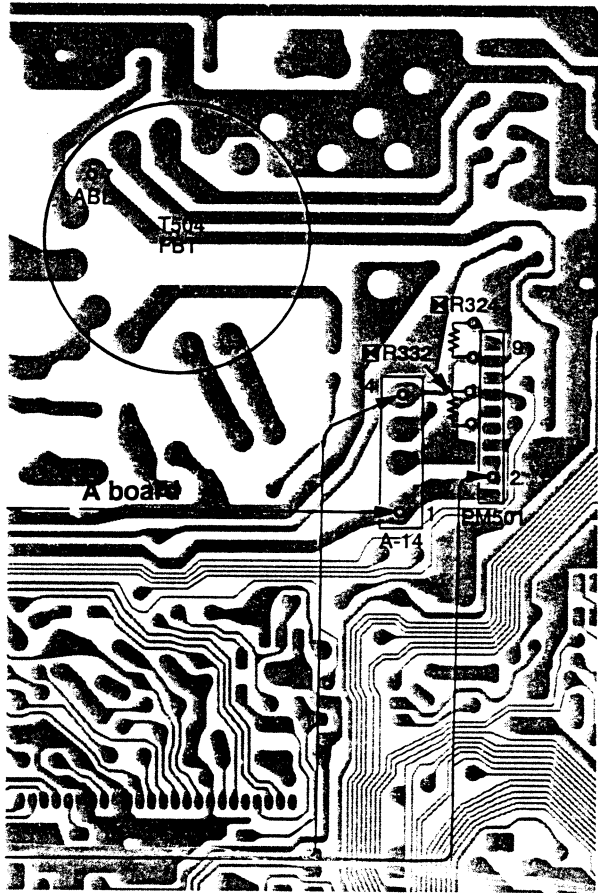
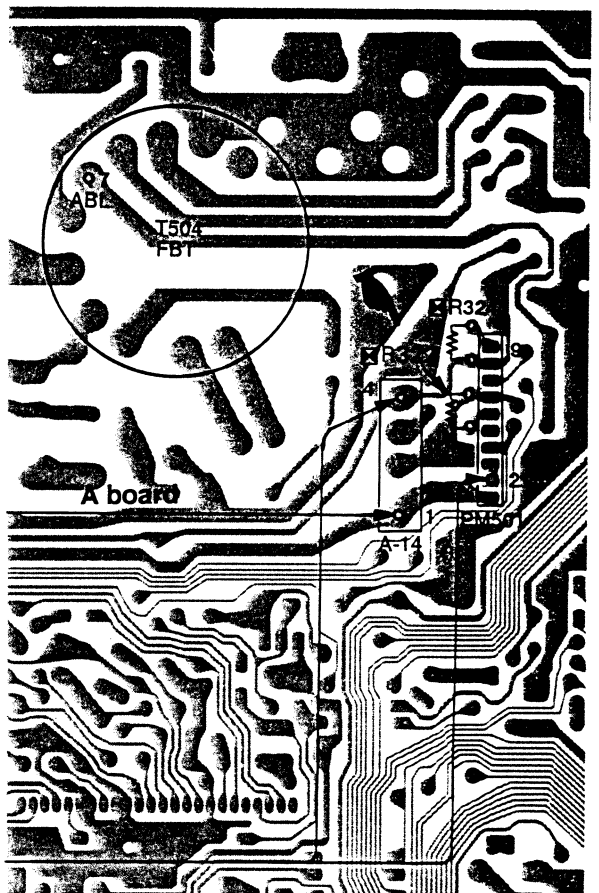
Correct the service manual as shown below.
File this correction with the service manual.



 : Indicates corrected portion

SECTION 4

SAFETY RELATED ADJUSTMENTS

Page	Incorrect	Correct
16		

SECTION 6 DIAGRAMS

6-2 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS TO CIRCUIT NOTE

Page	Incorrect	Correct
19	• Readings are taken with a color-bar signal input. • Readings are taken with a 10 MΩ digital multimeter. • Voltage are dc with respect to ground unless otherwise noted. • Voltage variations may be neted due to normal production tolerances. •  : B+ bus. •  : signal path.	• Readings are taken with a color-bar signal input. • Readings are taken with a 10 MΩ digital multimeter. • Voltage are dc with respect to ground unless otherwise noted. • Voltage variations may be neted due to normal production tolerances. •  : B+ bus. •  : signal path. • * : Model difference 

6-2 SCHEMATIC DIAGRAMS (A BOARD)

Page

Incorrect

Correct

20

20

N

M

L

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10

1

U BOARD U-2

B

TED LINE IS ONLY STEREO (VIDEO) MODEL.

C

D

9

10

1

U BOARD U-2

B

TED LINE IS ONLY STEREO (VIDEO) MODEL.

C

D

5

6

L

M

N

5

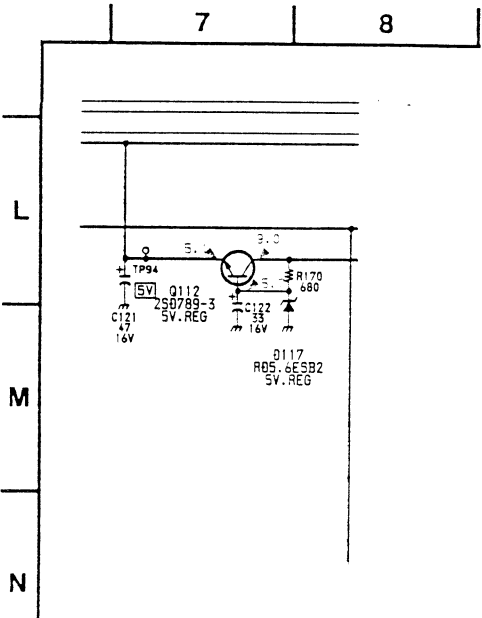
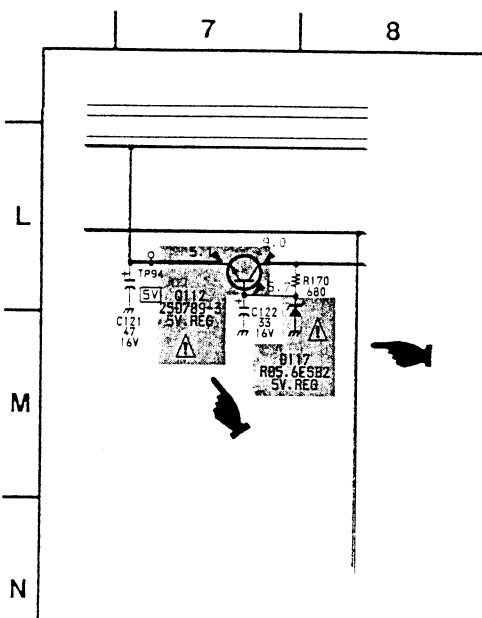
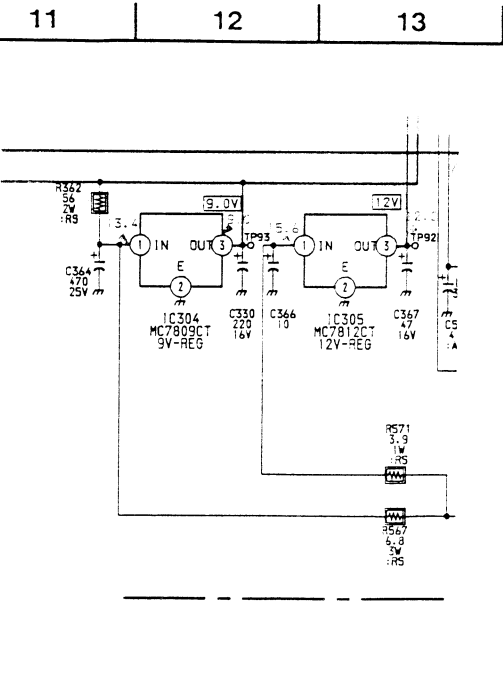
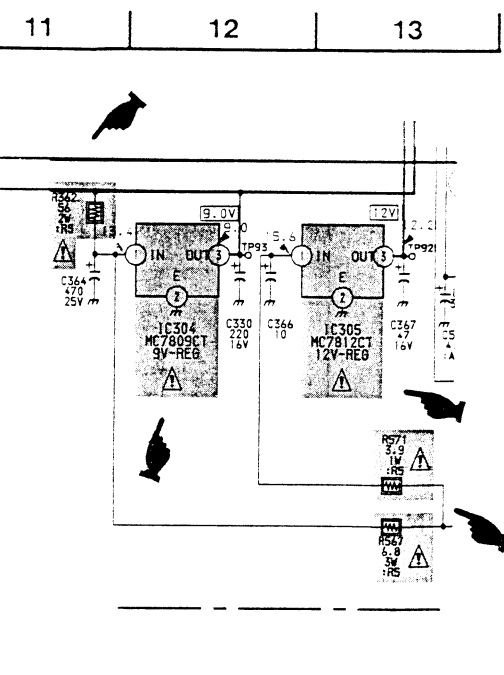
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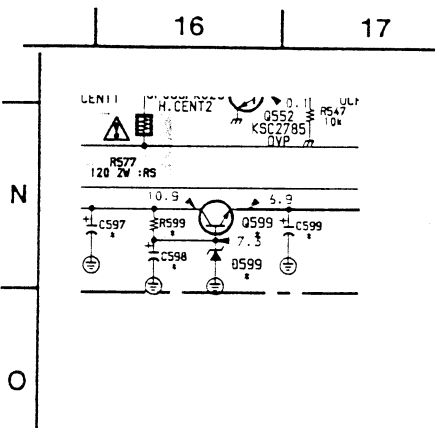
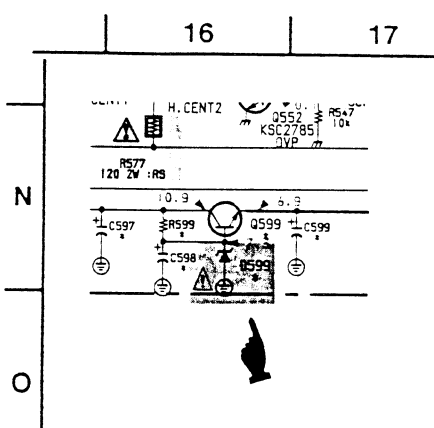
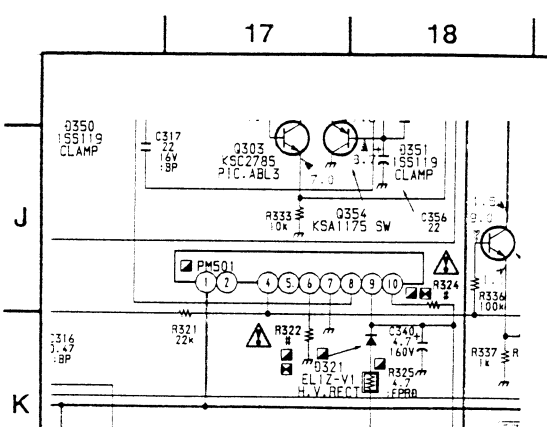
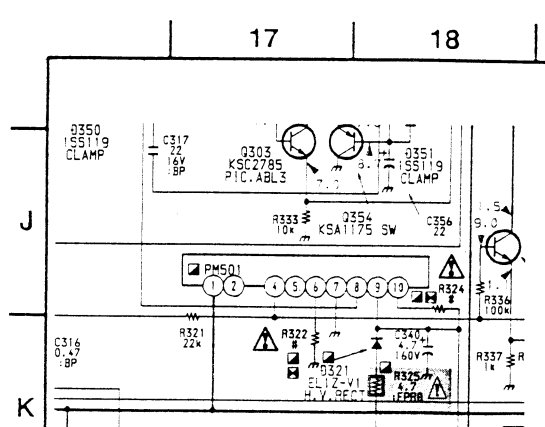
6-2 SCHEMATIC DIAGRAMS (A BOARD)

Page	Incorrect	Correct
20		
21		

6-2 SCHEMATIC DIAGRAMS (A BOARD)

Page	Incorrect	Correct
21		
21		

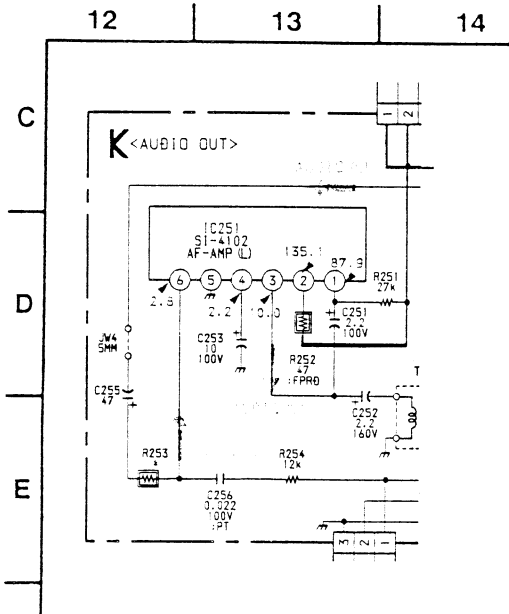
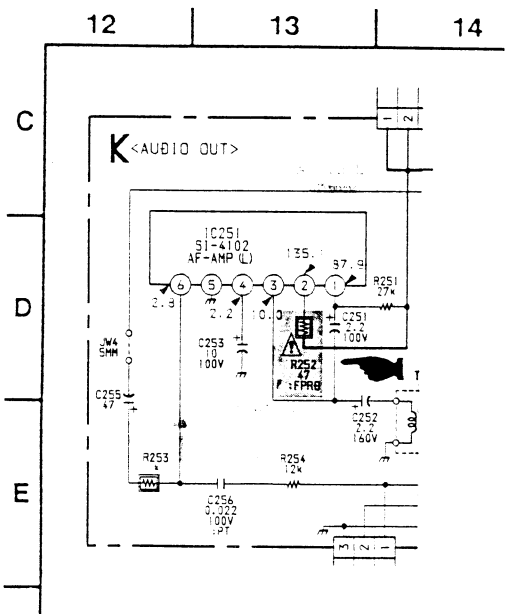
6-2 SCHEMATIC DIAGRAMS (A BOARD)

Page	Incorrect	Correct
21		
21		

6-2 SCHEMATIC DIAGRAMS (A,C BOARD)

Page	Incorrect			Correct		
22	20 21 H I J			20 21 H I J		
	21 22 B C D			21 22 B C D		

6-2 SCHEMATIC DIAGRAMS (K BOARD)

Page	Incorrect	Correct
27		

6-2 SCHEMATIC DIAGRAMS (A BOARD)

A board waveform

Page	Incorrect	Correct																																																												
22	A BOARD <table> <tr> <td>① 2.4Vp-p (H)</td><td>② 2.4Vp-p (H)</td><td>③ 2.4Vp-p (H)</td></tr> <tr> <td>④ 2Vp-p (H)</td><td>⑤ 1.8Vp-p (H)</td><td>⑥ 1.6Vp-p (H)</td></tr> <tr> <td>⑦ 1.1Vp-p (H)</td><td>⑧ 4.4Vp-p (H)</td><td>⑨ 4.2Vp-p (H)</td></tr> <tr> <td>⑩ 4.2Vp-p (H)</td><td>⑪ 1.9Vp-p (V)</td><td>⑫ 2.0Vp-p (V)</td></tr> <tr> <td>⑬ 1.6Vp-p (H)</td><td>⑭ 5.0Vp-p (H)</td><td>⑮ 5.2Vp-p (H)</td></tr> <tr> <td>⑯ 0.07Vp-p (3.58MHz)</td><td>⑰ 4.8Vp-p (H)</td><td>⑱ 1.1Vp-p (V)</td></tr> <tr> <td>⑲ 4.8Vp-p (V)</td><td>⑳ 6Vp-p (V)</td><td>㉑ 230Vp-p (H)</td></tr> <tr> <td>㉒ 940Vp-p (H)</td><td>㉓ 8Vp-p (V)</td><td>㉔ 4.8Vp-p (H)</td></tr> <tr> <td>㉕ 220Vp-p (H)</td><td>㉖ 10Vp-p (H)</td><td>㉗ 5Vp-p (H)</td></tr> <tr> <td>㉘ 5.2Vp-p (V)</td><td>㉙ 3.4Vp-p (4MHz)</td><td></td></tr> </table>	① 2.4Vp-p (H)	② 2.4Vp-p (H)	③ 2.4Vp-p (H)	④ 2Vp-p (H)	⑤ 1.8Vp-p (H)	⑥ 1.6Vp-p (H)	⑦ 1.1Vp-p (H)	⑧ 4.4Vp-p (H)	⑨ 4.2Vp-p (H)	⑩ 4.2Vp-p (H)	⑪ 1.9Vp-p (V)	⑫ 2.0Vp-p (V)	⑬ 1.6Vp-p (H)	⑭ 5.0Vp-p (H)	⑮ 5.2Vp-p (H)	⑯ 0.07Vp-p (3.58MHz)	⑰ 4.8Vp-p (H)	⑱ 1.1Vp-p (V)	⑲ 4.8Vp-p (V)	⑳ 6Vp-p (V)	㉑ 230Vp-p (H)	㉒ 940Vp-p (H)	㉓ 8Vp-p (V)	㉔ 4.8Vp-p (H)	㉕ 220Vp-p (H)	㉖ 10Vp-p (H)	㉗ 5Vp-p (H)	㉘ 5.2Vp-p (V)	㉙ 3.4Vp-p (4MHz)		A BOARD <table> <tr> <td>① 2.4Vp-p (H)</td><td>② 2.4Vp-p (H)</td><td>③ 2.4Vp-p (H)</td></tr> <tr> <td>④ 2Vp-p (H)</td><td>⑤ 1.8Vp-p (H)</td><td>⑥ 1.6Vp-p (H)</td></tr> <tr> <td>⑦ 1.1Vp-p (H)</td><td>⑧ 4.4Vp-p (H)</td><td>⑨ 4.2Vp-p (H)</td></tr> <tr> <td>⑩ 4.2Vp-p (H)</td><td>⑪ 1.9Vp-p (V)</td><td>⑫ 2.0Vp-p (V)</td></tr> <tr> <td>⑬ 1.6Vp-p (H)</td><td>⑭ 5.0Vp-p (H)</td><td>⑮ 5.2Vp-p (H)</td></tr> <tr> <td>⑯ 0.07Vp-p (3.58MHz)</td><td>⑰ 4.8Vp-p (H)</td><td>⑱ 1.1Vp-p (V)</td></tr> <tr> <td>⑲ 48Vp-p (V)</td><td>⑳ 6Vp-p (V)</td><td>㉑ 230Vp-p (H)</td></tr> <tr> <td>㉒ 940Vp-p (H)</td><td>㉓ 8Vp-p (V)</td><td>㉔ 4.8Vp-p (H)</td></tr> <tr> <td>㉕ 220Vp-p (H)</td><td>㉖ 10Vp-p (H)</td><td>㉗ 5Vp-p (H)</td></tr> <tr> <td>㉘ 5.2Vp-p (V)</td><td>㉙ 3.4Vp-p (4MHz)</td><td></td></tr> </table>	① 2.4Vp-p (H)	② 2.4Vp-p (H)	③ 2.4Vp-p (H)	④ 2Vp-p (H)	⑤ 1.8Vp-p (H)	⑥ 1.6Vp-p (H)	⑦ 1.1Vp-p (H)	⑧ 4.4Vp-p (H)	⑨ 4.2Vp-p (H)	⑩ 4.2Vp-p (H)	⑪ 1.9Vp-p (V)	⑫ 2.0Vp-p (V)	⑬ 1.6Vp-p (H)	⑭ 5.0Vp-p (H)	⑮ 5.2Vp-p (H)	⑯ 0.07Vp-p (3.58MHz)	⑰ 4.8Vp-p (H)	⑱ 1.1Vp-p (V)	⑲ 48Vp-p (V)	⑳ 6Vp-p (V)	㉑ 230Vp-p (H)	㉒ 940Vp-p (H)	㉓ 8Vp-p (V)	㉔ 4.8Vp-p (H)	㉕ 220Vp-p (H)	㉖ 10Vp-p (H)	㉗ 5Vp-p (H)	㉘ 5.2Vp-p (V)	㉙ 3.4Vp-p (4MHz)	
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④ 2Vp-p (H)	⑤ 1.8Vp-p (H)	⑥ 1.6Vp-p (H)																																																												
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④ 2Vp-p (H)	⑤ 1.8Vp-p (H)	⑥ 1.6Vp-p (H)																																																												
⑦ 1.1Vp-p (H)	⑧ 4.4Vp-p (H)	⑨ 4.2Vp-p (H)																																																												
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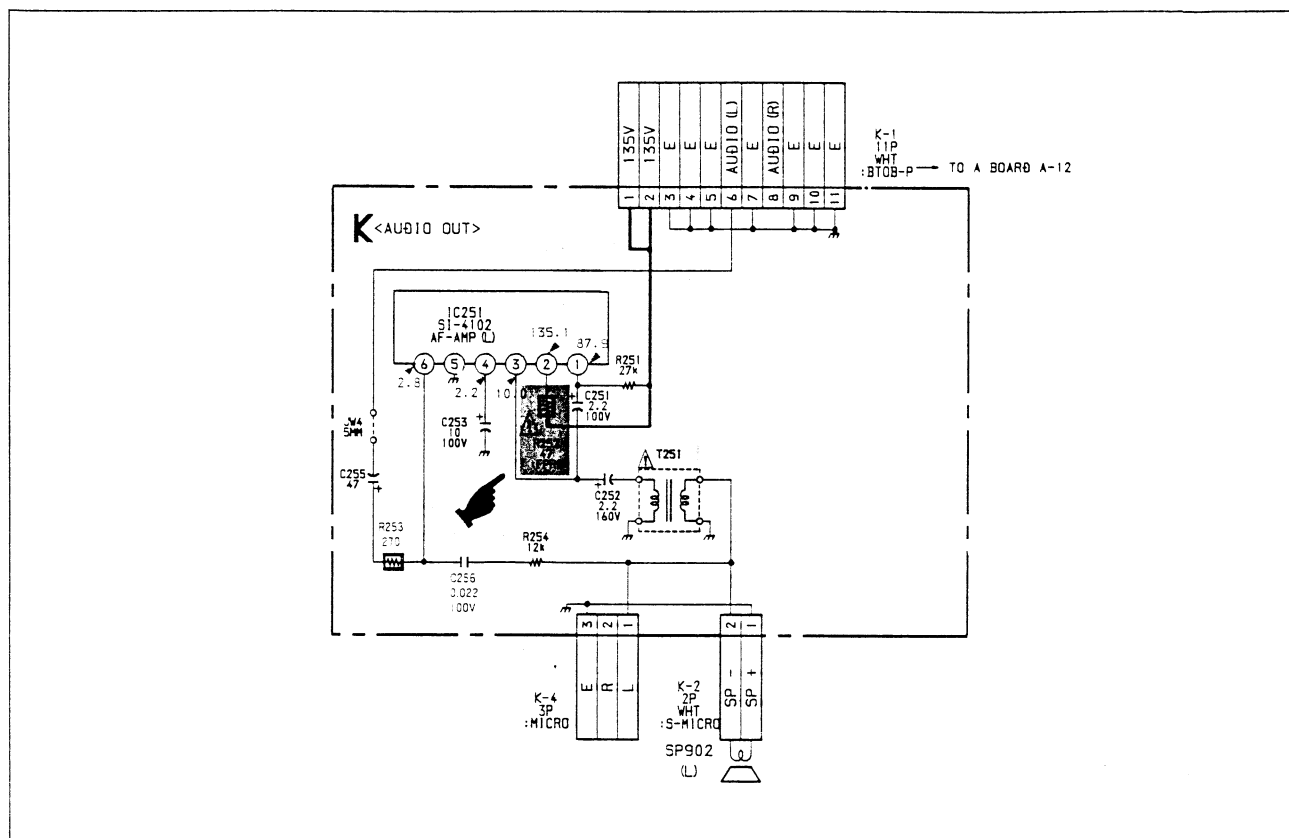
6-2 SCHEMATIC DIAGRAMS (A BOARD)

Circuit Board A Difference List(P19-P22)



Location	Ref.No	KV-19TR10	KV-19TR20
N-20	A-3	—	CONECTOR, BOARD TO BOARD 4P
C-5	C214	10MF 16V	—
M-14	C563	0.008 2KV	—
E-7	C351	—	47MF 16V
E-7	C352	—	47MF 16V
N-15	C596	—	0.0033MF 630V
N-16	C597	—	220MF 35V
N-16	C598	—	33MF 16V
N-16	C599	—	220MF 16V
J-2	D151	ISS119	—
N-16	D599	—	RD10ES-B2
N-15	D598	—	RH-1C
E-8	IC302	—	CX20061
N-16	Q599	—	2SD789-4
E-7	R354	—	100
E-7	R355	—	22K
D-7	R356	—	100
E-8	R357	—	100
N-14	R598	—	4.7
N-16	R599	—	1.5K
N-15	T599	—	TRANSFORMER, FERRITE

6-2 SCHEMATIC DIAGRAMS(Page27-28) (K board)



SECTION 8

ELECTRICAL PARTSLIST



Page		Incorrect	Correct
32	A	D117 8-719-109-89 DIODE RD5.6ES-B2	△ D117 8-719-109-89 DIODE RDS6ES-B2
		D599 8-719-110-17 DIODE RD10ES-B2	△ D599 8-719-110-17 DIODE RD10ES-B2
		IC303 8-759-104-05 IC μ PD6325C	△ IC303 8-759-104-05 IC μ PD6325C
		IC304 8-759-982-10 IC RC7809FA	△ IC-304 8-759-030-99IC MC7809CT
		IC305 8-759-013-09 IC MC7812CT	△ IC305 8-759-013-09 IC MC7812CT
		Q112 8-729-300-62 TRANSISTOR 2SD789-34	△ Q112 8-729-378-91 TRANSISTOR 2SD789-3
		Q501 8-729-107-26 TRANSISTOR 2SD1585-K	△ Q501 8-729-107-26 TRANSISTOR 2SD1585-K
		R325 1-249-389-11 CARBON 4.7 1/4W	△ R325 1-249-389-91 CARBON 4.7 1/4W
35		R362 1-215-907-11 METAL OXIDE 22 3W	△ R362 1-215-907-51 METAL OXIDE 22 3W
		R567 1-216-399-00 METAL OXIDE 6.8 3W	△ R567 1-216-399-51 METAL OXIDE 6.8 3W
		R570 1-215-869-11 METAL OXIDE 1K 1W	△ R570 1-213-143-61 METAL OXIDE 1K 1W
		R571 1-216-356-00 METAL OXIDE 3.9 1W	△ R571 1-216-356-91 METAL OXIDE 3.9 1W
		R573 1-247-764-11 CARBON 10K 1/2W	△ R573 1-247-764-91 CARBON 10K 1/2W
		R598 1-249-389-11 CARBON 4.7 1/4W	△ R598 1-249-389-91 CARBON 4.7 1/4W
		R617 1-249-401-11 CARBON 47 1/4W	△ R617 1-249-401-91 CARBON 47 1/4W
36	C	R728 1-216-372-11 METAL OXIDE 1.8 2W	△ R728 1-216-372-51 META OXIDE 1.8 2W
37	K	C252 1-124-799-11 ELECT 2.2MF 160V	△ C252 1-123-930-91 ELECT 2.2MF 160V